

RICE UNIVERSITY

**The Cost of Security: Foreign Policy Concessions  
and Military Alliances**

by

**Jesse C. Johnson**

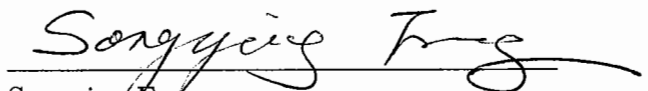
A THESIS SUBMITTED  
IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE

**Doctor of Philosophy**

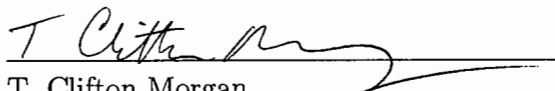
APPROVED, THESIS COMMITTEE:



Brett Ashley Leeds, Committee Chair  
Associate Professor of Political Science



Songying Fang  
Assistant Professor of Political Science



T. Clifton Morgan  
Albert Thomas Professor of Political  
Science



Natalia Sizova  
Assistant Professor of Economics

Houston, Texas

April 20, 2012

## ABSTRACT

### The Cost of Security: Foreign Policy Concessions and Military Alliances

by

Jesse C. Johnson

One way states can mitigate external threats is by entering into military alliances. However, threatened states are reluctant to enter into military alliances because alliance membership can require significant policy concessions. An important and unanswered question is: when will states be willing to make policy concessions in exchange for military alliances? This is the question that is investigated in this project. To address this question I develop a simple three actor bargaining model of alliance formation that endogenizes both external threat and policy concessions. I test the model's implications with two sets of large N analyses and find strong support for the hypotheses. The first set of empirical analyses uses a novel research design that takes into account the attributes of challengers to evaluate states' alliance formation decisions. The second set is based on the same research design and provides one of the first analyses of foreign policy concessions among alliance members. The results suggest that threatened states are willing to make more concessions in exchange for an alliance when they are unlikely to defeat their challengers alone and when their allies have a large effect on their probability of defeating their challengers. This research highlights both the security and non-security motivations for alliance formation and demonstrates that alliances have important influences beyond international security.

## Acknowledgments

I would like to thank first and foremost my advisor Ashley Leeds who has provided me with invaluable advice at every step in my graduate school career. Ashley is an amazing mentor who has dedicated a considerable amount of time and energy over the last five years towards my professional and personal development. Without Ashley's guidance, I would not be the scholar I am today.

I would also like to provide a special thanks to Songying Fang. Her training made the formal modeling component of this project possible. In addition to being a wonderful game theory instructor, Songying has taught me many useful insights about this discipline and myself. I am very fortunate to have had her become interested in this project and my success.

I would also like to thank several of my other instructors at Rice. I would like to thank Cliff Morgan for constantly pushing me to think further about my views. I would like to thank Ric Stoll for providing helpful comments on numerous projects and presentations. Finally, I would like to thank Randy Stevenson for providing excellent empirical methods training.

In addition to thanking my instructors, I would like to thank several of my fellow graduate students. I would like to thank Daina Chiba who has provided me with helpful methodological and technical advice throughout my graduate school career. He has also proven to be a great colleague and friend. Tiffany Barnes has also been a great colleague and friend who has been very supportive of me throughout my graduate school career. I have also benefited from interactions with Yoshi Kobayashi, Aki Matsuo, Carla Martinez, and Tobias Heinrich. I would also like to thank Ben Saxton, Andrew Spiegelman, Jeff Worne, David Fortunato, and many others for being

good friends during my time at Rice and making living in Houston a fun experience.

Finally, I want to thank my parents. Despite both of their difficulties they have been very supportive of me and have done their best to make sure I have been in a position to succeed. For that, I am forever grateful.

# Contents

List of Figures	vii
List of Tables	viii
<b>1 Introduction</b>	<b>1</b>
1.1 Outline . . . . .	3
<b>2 Alliances, Security, and Policy Concessions</b>	<b>6</b>
2.1 Military Alliances . . . . .	6
2.2 Alliances and Security . . . . .	7
2.3 Alliances and Concessions . . . . .	9
2.4 Figures . . . . .	15
<b>3 A Bargaining Model of Alliance Formation</b>	<b>16</b>
3.1 The Model . . . . .	16
3.2 Empirical Implications . . . . .	22
3.2.1 Alliance Formation . . . . .	22
3.2.2 Policy Concessions . . . . .	24
3.3 Discussion . . . . .	25
3.4 Appendix . . . . .	27
3.5 Figures . . . . .	33
<b>4 An Empirical Analysis of Alliance Formation</b>	<b>34</b>
4.1 Research Design . . . . .	34
4.1.1 Coding Alliance Formation . . . . .	36

4.1.2	Operationalizing the Concepts . . . . .	38
4.1.3	Control Variables and Estimation . . . . .	40
4.2	Results . . . . .	43
4.3	Discussion . . . . .	44
4.4	Figures . . . . .	46
4.5	Tables . . . . .	48
<b>5</b>	<b>An Empirical Analysis of Foreign Policy Concessions in Military Alliances</b>	<b>51</b>
5.1	Research Design . . . . .	51
5.1.1	Measuring Foreign Policy Concessions . . . . .	52
5.1.2	Control Variables and Estimation . . . . .	54
5.2	Results . . . . .	55
5.2.1	Robustness . . . . .	56
5.3	Discussion . . . . .	58
5.4	Figures . . . . .	59
5.5	Tables . . . . .	62
<b>6</b>	<b>Conclusion</b>	<b>68</b>
6.1	Broader Implications . . . . .	71
	<b>Bibliography</b>	<b>73</b>

## Figures

2.1	Percentage of States with Defensive Alliances . . . . .	15
3.1	A Bargaining Model of Alliance Formation and War . . . . .	33
4.1	Distribution of the Target's Probability of Winning . . . . .	46
4.2	Distribution of the Defender's Contribution . . . . .	47
5.1	Distribution of Foreign Policy Concessions . . . . .	59
5.2	The Effect of the Target's Probability of Winning on the Level of Concessions made by the Target . . . . .	60
5.3	The Effect of the Defender's Contribution on the Level of Concessions made by the Target . . . . .	61

## Tables

4.1	Logit Regression of Alliance Formation . . . . .	49
4.2	Alliance Formation Percentage Change . . . . .	50
5.1	Coded Foreign Policy Concessions . . . . .	62
5.2	Poisson Regression of the Number of Concessions . . . . .	63
5.3	Reduced Coded Foreign Policy Concessions . . . . .	64
5.4	Poisson Regression of the Reduced Number of Concessions . . . . .	65
5.5	Poisson Regression of the Number of Concessions Controlling for Dispute Level Factors . . . . .	66
5.6	Various Regressions of the Number of Concessions . . . . .	67



# Chapter 1

## Introduction

Arguably the most important function of the state is to maintain the security of its citizens. This requires the state to protect its citizens from each other as well as external threats. External threats exist due to the anarchic nature of the international system. There is nothing preventing a state from using military force against another state to further its interests. What determines whether a state will be able to further its interests by using military force against another state is the relative military capabilities of the two states. Therefore, in order to protect its citizens from external threats, states seek policies that can enhance their military capabilities.

One way states can enhance their military capabilities and mitigate external threats is by entering into military alliances. Research shows that states that have allies committed to defend them are less likely to be the target of militarized disputes (Leeds 2003, Johnson & Leeds 2011). In other words, alliances have a deterrence effect. Moreover, the results suggest that this effect is comparable to other, potentially less feasible, policy options for moderating external threats such as military development or democratization.

Given that alliances have considerable security benefits, one might ask why all threatened states do not enter into alliances. Clearly, all threatened states are not members of alliances. From 1816 to 2000, less than half of the targets of militarized

disputes had allies committed to defend them.<sup>1</sup> This suggests that entering into military alliances can involve significant costs.

One of the most commonly cited costs of entering into an alliance are policy concessions. That is, states must make policy concessions to their alliance partners in exchange for promises of support in the event of military conflict. This notion of alliance formation is advanced in several qualitative studies (e.g., Schroeder 1976, Snyder 1997, Pressman 2008) and explicitly modeled by Morrow (1991). This research suggests that many threatened states are reluctant to enter into alliances because they do not want to lose autonomy over their policy making abilities.

An important and unanswered question then is: when will states be willing to make policy concessions in exchange for military alliances? In other words, when will states be willing to pay the cost of allying in order to obtain the security benefits of an alliance? This is the question that will be investigated in this project. Answering this question is important for international relations scholarship for several reasons.

First, this question is fundamental for understanding the emergence of alliances in the international system. In order to understand when alliances will form requires an analysis of their benefits as well as their costs. Early treatments of alliance formation focus mostly on the security benefits alliances provide but pay little attention to the costs states pay to be alliance members (e.g., Morgenthau 1973, Waltz 1979, Walt 1987). This project explicitly models and empirically evaluates costs of alliance formation.

Second, not only is this question fundamental for alliance scholarship but it is a

---

<sup>1</sup>This is based on the directed dyad conflict data analyzed by Johnson and Leeds (2011). It includes Correlates of War militarized interstate dispute data (Ghosn, Palmer & Bremer 2004) and alliance information from the Alliance Treaty Obligations and Provisions project (Leeds, Ritter, Mitchell & Long 2002). Out of the 2,354 militarized disputes in their data, 1,269 (54%) of the disputes involve targets without allies committed to defend them.

central question for the study of international security. Many policy options that can increase a state's security are not feasible for all international system members such as military development or democratization. As a result, many states rely on alliances to increase their security. Presently, over half of the states in the international system are members of at least one military alliance.<sup>2</sup>

Finally, understanding the conditions under which alliances are formed is important because alliances can have desirable effects. By increasing states' security and making them less likely to be the target of militarized disputes, alliances have peaceful effects. In other words, alliances have a deterrence effect that reduces militarized conflict in the international system. This suggests that alliances are an instrument policymakers can use to maintain peace in the world.

## 1.1 Outline

Addressing this question requires three tools. First, we need a theoretical model that identifies conditions under which states would be willing to make policy concessions in exchange for military alliances. Second, we need a research design that takes into account the characteristics of all the actors that the model suggests are important for alliance formation. Third, we need a measure of policy concessions among allies. I proceed as follows.

In the next chapter I review our current understanding of alliance formation. The chapter begins by defining a military alliance and providing descriptive statistics about alliance membership over time. It then reviews the security motivations that scholars have cited as reasons for states to form alliances. This is followed by a

---

<sup>2</sup>This is based on the Correlates of War "State System Membership List v2008.1" and the state-year data of the Alliance Treaty Obligations and Provisions project (Leeds et al. 2002)

discussion of research that suggests some allies require their partners to make policy concessions. This leads into a discussion of how we can combine states' security motivations and willingness to make concessions into one model to provide a more comprehensive understanding of alliance formation.

Chapter 3 presents a three actor bargaining model of alliance formation that endogenizes both external threat and policy concessions. This model produces empirical predictions about the conditions under which states will be willing to make foreign policy concessions in return for an alliance and what level of concessions they will be willing to make. The model suggests that states will make concessions in exchange for an alliance when they are unlikely to defeat their challengers alone and when their allies have a large effect on their probability of defeating their challengers in war. This theoretical model will be used to guide the empirical analyses conducted in the next two chapters.

In chapter 4 I develop a novel research design that tests the model's implications for alliance formation. The theoretical model identifies which states we would expect to form alliances if states are making policy concessions to their allies. One of the most important insights of the model is that the characteristics of three actors are important for alliance formation and policy concessions: a defender, target, and challenger. Existing empirical studies of alliance formation only include information about the potential allies and ignore the characteristics of the challenger (Lai & Reiter 2000, Gibler & Wolford 2006, Gibler 2008). Therefore, in order to test the implications of my model, I develop a novel research design that allows me to take into account the characteristics of all three actors. Using this research design, I find support for the two key alliance formation hypotheses derived from my theoretical model. First, I find that states are more likely to enter into alliances when they are unlikely to

defeat their challengers alone and, second, I find that states tend to form alliances that would have a large effect on their probability of defeating their challengers in war.

Chapter 5 is used to test the model's implications for foreign policy concessions in alliances. The empirical analysis in chapter 4 shows that the model is useful for identifying which states will form alliances but it provides no evidence that these states are making policy concessions to their partners. Presently, there is no existing measure of policy concessions. Previous research on policy concessions in alliances relies exclusively on case studies or indirect evidence. Therefore, in order to test additional implications of my model, I develop a measure of foreign policy concessions by taking advantage of the fact that states formalize concessions in alliance treaties. Using this measure and the research design developed in chapter 4, I find support for the two key policy concession hypotheses derived from my theoretical model. First, I find that those states that are unlikely to defeat their challengers alone agree to make more concessions to enter into alliances, and second, states agree to make more concessions to allies that have a large effect on their probability of defeating their challengers in war.

The final chapter is used for concluding remarks. I argue that the results of this project indicate that alliances are not just important for international security but that alliances can have important influences in all issue areas of international relations. States are often expected to change their behavior in a variety of ways to enter into military alliances. This insight suggests that states are able to use promises to defend other states militarily in order to influence their behavior. At times, this option may be more cost-effective and less harmful to populations than other policy options such as military force or economic sanctions.

## Chapter 2

### Alliances, Security, and Policy Concessions

#### 2.1 Military Alliances

A military alliance is a formal agreement among independent states that includes specific promises regarding military cooperation in the event of conflict. The operational definition adopted by the Alliance Treaty Obligations and Provisions (ATOP) project provides more insight: “Alliances are written agreements, signed by official representatives of at least two independent states, that include promises to aid a partner in the event of military conflict, to remain neutral in the event of conflict, to refrain from military conflict with one another, or to consult/cooperate in the event of international crises that create a potential for military conflict” (Leeds, Ritter, Mitchell, and Long 2002: 238). This definition makes a distinction between alliances and informal alignments or friendships between states.

The definition from the ATOP project also suggests that alliances can involve several different military obligations. This project is concerned with military alliances that have defensive obligations, in other words, defense pacts. Defense pacts are alliances that include “promises to assist a partner actively in the event of attack on the partner’s sovereignty or territorial integrity” (Leeds, Ritter, Mitchell, and Long 2002: 241).<sup>1</sup> It is common for military alliances to include defensive obligations. According

---

<sup>1</sup>These are the alliance commitments that scholars typically contend states make policy concessions for because of the security benefits they provide. However, it is possible that states make policy concessions for the benefits other alliance commitments provide, such as offense or neutrality pacts, but that is beyond the scope of this project.

to the ATOP data, approximately 41% of the alliances formed between 1815 and 2003 include defensive obligations, and of those that require active assistance, 95% include defensive obligations.

Figure 2.1 shows the percentage of states in the international system that were members of defense pacts from 1815 to 2003.<sup>2</sup> This figure shows that defense pacts have been a component of many states' foreign policy since 1815. Throughout the first half of the 19th century more than a third of states were members of defense pacts. In the second half of the 19th century several defense pacts were terminated after major wars such as the Seven Weeks' War of 1866 and the Franco-Prussian War of 1870-1871. During the 20th century there was an increase in the number of defense pacts before and during World War I and World War II. However, after World War I many defense pacts were terminated and after World War II many were formed. Every year since the end of World War II, over half of the international system has been members of defense pacts. These percentages show that at all times many states are members of military alliance but many are not. This suggests that alliances are useful policy instruments for some states but not all. I now turn to our current understanding of states' motivations for entering into these international agreements.

## 2.2 Alliances and Security

The most basic motivation for forming a military alliance is to increase members' security. This idea underlies existing understandings of alliance formation. It features prominently in balance of power arguments that suggest states form alliances to prevent strong states from overtaking weaker states (e.g., Gulick 1955, Morgenthau

---

<sup>2</sup>I utilize the Correlates of War (COW) "State System Membership List v2008.1" to identify international system members and I use the ATOP state-year data to identify members of defense pacts (Leeds et al. 2002).

1973, Waltz 1979). It is also the basis for Walt's (1987) refinement of the balance of power argument which suggests states form alliances to balance against states that actually pose a threat. Finally, it is at the core of research that suggests states have different goals and will form alliances to protect other states that further those goals (e.g., Bueno de Mesquita 1981).

While existing understandings of alliance formation disagree over who states prefer to ally with (e.g., weak states, threatened states, states with similar goals), they agree that alliances increase the security of their members. This notion is supported by both formal models of alliance formation and war and large-N empirical analyses of states' conflict behavior. Morrow (1994) and Smith (1995, 1998) develop a series of three actor extended deterrence models that show when the target state has allies committed to defend it the challenger will be less likely to initiate a dispute. The logic is rather straightforward. When two or more states enter into an alliance, potential challengers expect those states to fight together in war because alliance formation is assumed to be costly. Only those states that are likely to honor their alliance commitments form alliances.<sup>3</sup> As a result of the alliance members aggregating their capabilities, they are expected to have a higher probability of winning the wars they fight together than if they fought alone. This expected increase in alliance members' probability of success in war makes potential challengers reluctant to initiate militarized disputes against them.

Empirical evidence also supports the idea that alliances increase a state's security. Leeds (2003) and Johnson and Leeds (2011) both show that defense pacts have the deterrence effect expected by formal models. Using directed-dyad year data on states'

---

<sup>3</sup>Empirical evidence supports this notion. Leeds et al. (2000) find that alliances are honored approximately 75% of the time.



conflict behavior they show that if the target in the dyad has allies committed to defend it then the challenger will be less likely to initiate a militarized dispute.<sup>4</sup> More specifically, Johnson and Leeds report that joining a defense pact reduces the probability of being the target of a militarized dispute by approximately 20% and that this effect is comparable to other policy options for increasing state security such as military development or democratization.

Given that alliances have considerable security benefits, one might ask why all threatened states do not enter into alliances. If alliances can prevent challenger's from initiating disputes why are state's reluctant to enter into alliances? The most obvious answer is that alliance membership must be associated with significant costs. However, most studies of alliance formation focus on the security benefits alliances provide and overlook the costs states pay to be members. The costs are either largely ignored, as in the balance of power framework, or simply assumed without much discussion, as is the case with the extended deterrence models. Yet, the costs of alliance formation are vital to understanding the role of alliances in international politics. They explain why threatened states are reluctant to seek allies and why alliances provide information to potential challengers. What are the costs of alliance formation? In the next section I discuss one of the most significant costs of alliance formation identified in the literature, policy concessions.

## 2.3 Alliances and Concessions

Numerous accounts of alliance formation suggest that states use alliances to obtain policy concessions. That is, all states that enter into alliances are not states that

---

<sup>4</sup>Leeds (2003) finds this effect in data covering the period from 1816 to 1944 and Johnson and Leeds (2011) find this effect in data covering the period from 1816 to 2000.

are threatened and are concerned with the security benefits alliances provide. Some states enter into alliances to influence the policies of alliance members who desire the security benefits of the alliance. This notion of alliance formation is advanced in several qualitative studies and formal models in the alliance literature.

An early analysis of alliance politics that highlights this function of alliances is done by Schroeder (1976). He suggests that alliances are best understood as “tools of management.” He argues that the desire for capability aggregation does not play a vital role for all states’ alliance formation decisions. Many states form alliances to exercise control over other states’ foreign policies. Snyder (1997) identifies this as one of the principal motivations for alliance formation. Pressman (2008) suggests that policy influence was an important motivation in several well known alliances. For example, he suggests that the Dual Alliance between Germany and Austria-Hungary in 1879 was formed partly because Germany wanted to prevent Austria-Hungary from allying with other European Powers. Another example is his claim that the United States chose to ally with South Korea in 1953 to get South Korea to drop policy stances that were hindering the Korean armistice talks.

In addition to being emphasized in the qualitative literature on alliance formation, formal models of alliance formation also highlight the role policy concessions play in alliance formation. In a seminal study on alliance formation, Morrow (1991) develops what he refers to as the autonomy-security trade-off model.<sup>5</sup> In the model states can use alliances to increase their security and pursue changes in the foreign policy status quo. He shows that relatively secure states would be willing to promise some security to less secure states through a military alliance in exchange for some control

---

<sup>5</sup>To develop his argument he uses a spatial model and assumes that states have convex preferences over changing the status-quo and security and that a state would prefer to have a moderate amount of both to high levels of one and low levels of the other.

over their policies. Palmer and Morgan's (2006) two-good theory, which is a general theory of foreign policy, posits a similar notion of alliance formation. In their model alliances are foreign policy instruments that can be used to maintain aspects of the status quo and change aspects of the status quo.

The literature on policy concessions and alliance formation suggests that threatened states are reluctant to enter into alliances because they do not want to lose autonomy over their policy making abilities. An important and unanswered question then is: when will states be willing to make policy concessions in exchange for military alliances? In other words, when will states be willing to pay the cost of allying in order to obtain the security benefits of an alliance? Addressing this question requires three tools.

First, we need a theoretical model that identifies conditions under which states would be willing to make policy concessions in exchange for military alliances. That is, we need a model that allows a state to make policy concessions in exchange for a military alliance in the shadow of an external threat. Existing models of alliance formation fall short of this. Presently, we have one set of models that consider policy concessions among allies but do not model a state's level of external threat (Morrow 1991, Palmer and Morgan 2006) and another set that models a state's level of external threat but does not allow for policy concessions to be made between allies (Morrow 1994, Smith 1995, 1998). Therefore, in the next chapter I develop a model that combines insights from both sets of models. More specifically, I develop a three actor bargaining model of alliance formation that endogenizes both external threat and policy concessions.

The model produces both hypotheses that are consistent with the existing literature and hypotheses that refine the conventional wisdom. The hypotheses regarding

alliance formation are consistent with the extended deterrence models that assume alliance formation is costly: states will be more likely to form alliances when they are unlikely to defeat their challengers alone and states will be more likely to form alliances with states that will have a large effect on their probability of defeating their challenger in war (Morrow 1994, Smith 1995, 1998). However, there is no large-N empirical test of these hypotheses. This is because, as will be discussed later, there is no established research design for evaluating three actor models of alliance formation. Contrary to the hypotheses regarding alliance formation, the hypotheses regarding policy concessions in alliances are not consistent with existing models of alliance formation. It is typically argued that the strongest states are the ones that form alliances to obtain policy concessions and that the weakest states make policy concessions for the protection of the strong state (Morrow 1991, Palmer and Morgan 2006). However, my model suggests that whether a state wants to make concessions in exchange for an alliance depends on its strength relative to its challenger's strength. Therefore, some strong states will want to make concessions to form alliances and not all weak states will want to make concessions for an alliance.

Second, we need a research design that takes into account the characteristics of all the actors that the model suggests are important for alliance formation. While developing a model that identifies conditions under which states would be willing to make policy concessions in exchange for an alliance offers an advancement over existing theoretical models of alliance formation, the project will be much more valuable if the theoretical insights of the model are combined with empirical tests. One of the most important insights of the model is that the characteristics of three actors are important for alliance formation and policy concessions: a defender, target, and challenger. I am unable to rely on existing alliance formation research designs.

This is because existing empirical studies of alliance formation are not motivated by extended deterrence models and ignore the characteristics of the challenger (Lai & Reiter 2000, Gibler & Wolford 2006, Gibler 2007). Therefore, in order to test the implications of my model, I develop a novel research design that moves away from the standard dyadic framework and introduces the characteristics of a challenger.

The three actor research design not only produces empirical results that support the implications of my theoretical model, it also uncovers important empirical relationships that are inconsistent across previous dyadic alliance formation research designs that ignore the characteristics of the challenger. For example, external threat plays a role in all theories of alliance formation, including the one advanced in this project. If there is no external threat then there is no need for increased security through alliance membership. However, previous empirical analyses do not find a consistent relationship between external threat and alliance formation. For example, several studies that use the dyadic external threat measure developed by Lai and Reiter (2000), report results that suggest external threat is unrelated to alliance formation and even results that suggest external threat decreases the probability of alliance formation (e.g., Leeds et al. 2002, Gibler & Wolford 2006, Gibler 2007).<sup>6</sup> This is not the case in the three actor research design developed in this project. Using a measure of external threat that is based on the characteristics of the challenger, as is suggested by the theoretical model presented in chapter 3, I find that as a state's level of external threat increases they are more likely to enter into a military alliance.

Finally, we need a measure of policy concessions among allies. While showing that the model is consistent with existing alliance patterns is a necessary first step, ulti-

---

<sup>6</sup>Lai and Reiter's (2000) dyadic measure of level of threat is the number of militarized interstate disputes each state has participated in over the past 10 years.

mately we want to see if the model explains policy concessions among allies. Presently, there is no existing measure of policy concessions. The most common approach to analyze concessions and alliances is to rely on case studies (e.g., Pressman 2008). Some scholars have provided quantitative analysis of concessions among allies but this consists exclusively of indirect evidence. For example, Morrow (1991) argues that his model suggests that asymmetric alliances should last longer and that changes in the members' capabilities should increase the probability that an alliance is broken. He finds support for these expectations but he does not demonstrate that allies are making foreign policy concessions in exchange for security. Palmer and Morgan (2006) also provide several empirical tests but their tests focus on the effects of alliance formation on allies' foreign policy behavior such as military expenditures and dispute initiation.<sup>7</sup> Therefore, one of the key contributions of this project is to develop a measure of policy concessions among allies and test the model's implications.

The results from the policy concession analysis is important for alliance formation research for two reasons. First, it corroborates a large literature that suggests policy concessions play a prominent role in alliance formation. It demonstrates that concessions were important in a number of alliances beyond the prominent alliances that have been the focus of case studies and it provides additional empirical support for the quantitative studies that provide indirect evidence of policy concessions in alliances. Second, it identifies key variables that influence the level of policy concessions states make in alliances. It shows that the shadow of external threat is key to understanding when and how much concessions a state will make to enter into a military alliance. I will now turn to the theoretical model that will be the basis for all of the empirical analysis in this project.

---

<sup>7</sup>See also Morgan and Palmer (2003).

## 2.4 Figures

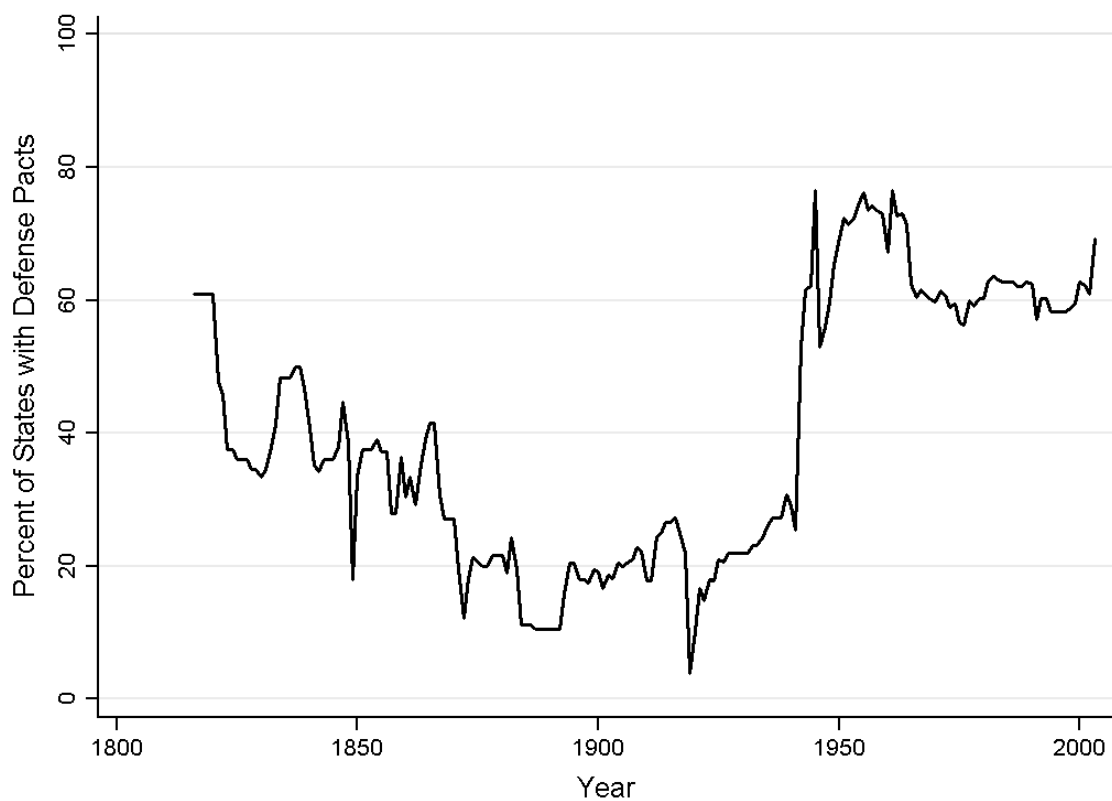


Figure 2.1 : Percentage of States with Defensive Alliances

## Chapter 3

### A Bargaining Model of Alliance Formation

In order to understand foreign policy concessions in military alliances I develop a three actor bargaining model of alliance formation and war with complete information. By endogenizing both external threat and policy concessions, this model combines two perspectives on alliance formation. The first perspective suggests that states form alliances in response to external threats (Morrow 1994, Smith 1995, 1998). The second perspective suggests that some states use military alliances to obtain policy concessions from threatened states (Morrow 1991, Palmer and Morgan 2006). When combined, these perspectives identify conditions under which states would be willing to make policy concessions in exchange for a military alliance.

#### 3.1 The Model

Suppose there are three states: a defender (D), target (T), and challenger (C). The target is deciding whether to form an alliance with the defender knowing that it has a conflict of interest with the challenger. Furthermore, the defender is demanding a level of foreign policy concessions from the target in order to form an alliance. However, the alliance increases the capabilities of the target. This game is illustrated in Figure 3.1.

The game begins with the defender proposing that the target makes some level of foreign policy concessions,  $y \geq 0$ , to the defender in return for an alliance; higher



values indicate larger concessions to the defender. The target can either accept the proposal and form an alliance with the defender or reject the proposal and not ally with the defender. If the target accepts the alliance, the defender gains the agreed upon foreign policy concessions,  $y$ , from the target, and the target loses them. In addition, both the defender and target pay an alliance formation cost  $a_i > 0$  where  $i \in \{D, T\}$ .

Following the target's decision to ally or not with the defender, the challenger decides whether to make a demand  $x \in (0, 1]$  from the target or not where  $x$  is the challenger's share and  $1 - x$  is the target's share. If the challenger does not make a demand the status quo division prevails and the target and challenger receive their status quo payoff  $s_i \in [0, 1]$  where  $i \in \{T, C\}$  and  $s_T + s_C = 1$ . The defender also has a preference over the status quo division of the disputed good, but it is not the same as the target. It is represented by  $s_T$  conditioned by  $\beta \in [0, 1]$ . If  $\beta = 1$  the defender has the same preference over the status quo division of the disputed good as the target; if  $\beta = 0$  the defender does not draw a benefit from the status quo division of the disputed good.

If the challenger does make a demand, the target decides either to accept or reject the demand made by the challenger. If the target accepts the demand, the challenger alters the status quo division. The challenger obtains its demand  $x$ , the target obtains  $1 - x$ , and the defender obtains  $\beta(1 - x)$ .

If the target rejects the challenger's demand, then war occurs. If war occurs, then the winner gets the entire disputed good. The probability of the target winning depends upon whether it is allied with the defender. Assume that if the target and

defender are allied, the defender will intervene with certainty.<sup>1</sup> However, if the target and defender are not allied, the defender will *not* intervene. If no alliance is formed the target will defeat the challenger with probability  $p_0 \in (0, 1)$  and if the target allies with the defender, then the target will defeat the challenger with probability  $p_A \in (0, 1)$ , where  $p_A > p_0$ . Furthermore, all war participants pay costs of war,  $c_i > 0$ , where  $i \in \{D, T, C\}$ .

This is a game of complete information and the equilibrium solution concept is Subgame Perfect Equilibrium. The game is solved by backward induction. I make several tie-breaking rules: when the target is indifferent between accepting and rejecting the challenger's demand it accepts; when the challenger is indifferent between making a demand and not making a demand it does not make a demand; when the target is indifferent between making concessions to ally and not being allied it allies; when the defender is indifferent between obtaining concessions to ally and not being allied it does not ally.

Two things are key to the equilibrium: the size of the demand the target is willing to accept from the challenger and the level of concessions the target is willing to make to the defender. I will explain each below.

First, depending upon whether the target is allied with the defender, the target is willing to accept different size demands from the challenger. When the target is *not* allied with the defender the largest demand it is willing to accept is  $1 - p_0 + c_T$  and when it is allied with the defender the largest demand it is willing to accept is  $1 - p_A + c_T$ . Let  $x^{(N)} = 1 - p_0 + c_T$  and  $x^{(A)} = 1 - p_A + c_T$ . It is easy to see that

---

<sup>1</sup>Of course, this is a simplifying assumption. However, the focus of this model is on the concessions states make to form alliances and not the commitment problem states face when they enter into alliances. Beyond that, Leeds, Long and Mitchell (2000) report that alliances are reliable approximately 75% of the time which suggests that this is a plausible simplifying assumption.

$x^{(N)} > x^{(A)}$  since  $p_A > p_0$ . The target will accept smaller demands when it is allied to the defender because it expects to achieve a better outcome through a multilateral war than through a bilateral war.

Given that war is costly, the challenger has no incentive to make a demand that will be rejected by the target. If the challenger decides to make a demand, it is always better off making the largest demand the target is willing to accept. Therefore, the largest demand the challenger will make is  $x^{(N)}$  when the target is *not* allied to the defender and  $x^{(A)}$  when the target is allied to the defender. Furthermore, the challenger will only make a demand when it can obtain a more favorable division of the disputed good than it already has (i.e., its status quo share). Therefore, if there is no alliance the challenger will demand  $x^{(N)}$  only if  $x^{(N)} > s_C$  and if there is an alliance the challenger will demand  $x^{(A)}$  only if  $x^{(A)} > s_C$ .

Following from this analysis of the challenger's demand, the first thing we learn about foreign policy concessions and military alliances is when the target will *not* be willing to make concessions to the defender. If the challenger is not going to make a demand in the absence of an alliance, then the target has no incentive to pay the costs of alliance formation. Therefore, if  $s_c \geq x^{(N)} > x^{(A)}$ , the target and defender do not form an alliance and the challenger does not make a demand in equilibrium. The more interesting cases are the ones where the challenger can benefit by making a demand and the target will be willing to make concessions to the defender.

Second, depending upon the effect of the alliance on the challenger's behavior, the target is willing to make different levels of concessions to the defender for an alliance. There are two scenarios. In one, if  $x^{(N)} > s_C \geq x^{(A)}$ , the challenger will make a demand when there is no alliance but it will *not* make a demand if there is an alliance. Since an alliance can prevent the challenger from making a demand,

the target will be willing to make some concessions to the defender in return for an alliance. The maximum level of concessions that the target is willing to make is the difference between its payoffs from being allied to the defender and *not* being allied to the defender. More specifically, if  $x^{(N)} > s_C \geq x^{(A)}$ , the highest level of concessions the target will be willing to make is  $s_T - a_T - (1 - x^{(N)})$ . The first term,  $s_T - a_T$ , is the target's payoff, without the necessary concessions, for being allied to the defender and deterring the challenger's demand; the second term,  $(1 - x^{(N)})$ , is the target's payoff for *not* being allied to the defender and accepting the challenger's demand. Let  $y^{(1)} = s_T - a_T - (1 - x^{(N)})$ .

Given what the target is willing to offer the defender, when will it be in the defender's interest to form an alliance? An alliance will form if the highest level of concessions the target is willing to make will allow the defender to be better off than not being allied to the target and having the challenger make a demand of the target. That is, if  $y^{(1)} > \beta(1 - x^{(N)}) - \beta s_T + a_D$ . The first term on the right hand side,  $\beta(1 - x^{(N)})$ , is the defender's payoff for allowing the target to face the challenger alone; the second term,  $\beta s_T - a_D$ , is the defender's payoff for being allied to the target and maintaining the status quo minus its alliance formation cost. Let  $y^{(3)} = \beta(1 - x^{(N)}) - \beta s_T + a_D$ . If  $y^{(1)} \leq y^{(3)}$ , then the target is unwilling to make the level of concessions that is necessary to ally with the defender and deter the challenger. This discussion leads to the following proposition:

**Proposition 1:** *If  $x^{(N)} > s_C \geq x^{(A)}$  and  $y^{(1)} > y^{(3)}$ , then in equilibrium the defender and target will form an alliance where the defender obtains  $y^{(1)}$  from the target.*

Sometimes, however, the challenger will make a demand regardless of whether there is an alliance. In this case even though the alliance reduces the demand the

challenger can expect the target to accept, the smaller demand is better than the status quo for the challenger. This occurs if  $x^{(N)} > x^{(A)} > s_C$ . Since an alliance can reduce the challenger's demand, the target will be willing to make concessions to the defender in return for an alliance. Again, the maximum level of concessions that the target is willing to make is the difference between its payoffs from being allied to the defender and *not* being allied to the defender. More specifically, when  $x^{(A)} > s_C$ , the highest level of concessions the target will be willing to make is  $(1 - x^{(A)}) - a_T - (1 - x^{(N)})$ . The first term,  $(1 - x^{(A)}) - a_T$ , is the target's payoff, before making concessions, for being allied to the defender and reducing the challenger's demand; the second term,  $(1 - x^{(N)})$ , is the target's payoff for *not* being allied to the defender and accepting the challenger's demand. Let  $y^{(2)} = (1 - x^{(A)}) - a_T - (1 - x^{(N)})$ .

As before, an alliance will form if the highest level of concessions the target is willing to make will allow the defender to be better off than not being allied to the target and having the challenger make a demand of the target. In this second case this occurs when  $y^{(2)} > \beta(1 - x^{(N)}) - \beta(1 - x^{(A)}) + a_D$ . The first term on the right hand side,  $\beta(1 - x^{(N)})$ , is the defender's payoff for allowing the target to face the challenger alone; the second term,  $\beta(1 - x^{(A)}) - a_D$ , is the defender's payoff for being allied to the target and reducing the challenger's demand minus its alliance formation cost. Let  $y^{(4)} = \beta(1 - x^{(N)}) - \beta(1 - x^{(A)}) + a_D$ . If  $y^{(2)} \leq y^{(4)}$ , then the target is unwilling to make the level of concessions that is necessary to ally with the defender and reduce the challenger's demand. This discussion leads to the following proposition:

**Proposition 2:** *If  $x^{(N)} > x^{(A)} > s_C$  and  $y^{(2)} > y^{(4)}$ , then in equilibrium the defender and target will form an alliance where the defender obtains  $y^{(2)}$  from the target.*

## 3.2 Empirical Implications

Propositions 1 and 2 identify conditions under which the target will make concessions to the defender in exchange for an alliance. They also identify the level of concessions the target will make. While there are several factors that influence alliance formation and policy concessions, I focus on two factors that will be the basis of the empirical analyses in the next two chapters: the probability of the target defeating the challenger,  $p_0$ , and the defender's contribution to a war between the target and challenger,  $p_A - p_0$ . I will begin by discussing how these factors influence alliance formation.

### 3.2.1 Alliance Formation

Propositions 1 and 2 suggest that an alliance will only be formed when the challenger is willing to make a demand of the target in the absence of an alliance. This occurs when  $x^{(N)} > s_C$ . That is, the challenger will only make a demand when it can obtain a more favorable division of the disputed good than it already has. If the challenger is not going to make a demand then the target has no incentive to make concessions to the defender for an alliance. This suggests what is important for alliance formation is whether the challenger is expected to make a demand. The challenger will be more likely to make a demand as the size of the demand that the challenger will have accepted by the target increases,  $x^{(N)}$ . Recall that,  $x^{(N)} = 1 - p_0 + c_T$ . A key factor influencing the demand of the challenger is the target's probability of defeating the challenger in a war which is captured by  $p_0$  in the model. Increases in the target's probability of defeating the challenger in a war decreases the size of the challenger's demand. Therefore, the model suggests the following hypothesis regarding alliance formation:

**Hypothesis 1:** *Increases in the probability of the target defeating the challenger,  $p_0$ , decrease the probability of alliance formation between the target and the defender.*

Propositions 1 and 2 also suggest that the characteristics of the defender are important for alliance formation. More specifically, allying with the defender must be able to deter the challenger from making a demand or at least significantly reduce the demand to make alliance formation beneficial. If an alliance with the defender deters the challenger from making demand, as in Proposition 1, then the target will be willing to make concessions to the defender for the alliance. If an alliance with the defender only reduces the challenger's demand, as in Proposition 2, the target will still be willing to make concessions to the defender for the alliance but the alliance must reduce the challenger's demand enough so that the target is willing to pay the costs of allying,  $a_T$ , and is willing to make the defender better off than not being allied (i.e.,  $y^{(2)} > y^{(4)}$ ). How much the challenger's demand is reduced by alliance formation is the difference between  $x^{(N)}$  and  $x^{(A)}$ . Recall that,  $x^{(N)} = 1 - p_0 + c_T$  and  $x^{(A)} = 1 - p_A + c_T$ . Therefore, how much the challenger's demand is reduced by alliance formation is a function of the difference between the target's probability of defeating the challenger in a war allied to the defender and the target's probability of defeating the challenger in a war *not* allied to the defender. This is captured by  $p_A - p_0$  in the model. In other words, what is important is the defender's contribution to a war between the target and challenger. As the defender's contribution increases, forming the alliance becomes more beneficial to both the target and defender. Therefore, the model suggests the following hypothesis regarding alliance formation:

**Hypothesis 2:** *Increases in the defender's contribution to a war between the target and challenger,  $p_A - p_0$ , increase the probability of alliance formation between the target and the defender.*

### 3.2.2 Policy Concessions

Propositions 1 and 2 identify specific levels of concessions that the defender will obtain from the target if an alliance is formed. In Proposition 1 the defender obtains  $y^{(1)}$  and in Proposition 2 the defender obtains  $y^{(2)}$ . This suggests what is important for concessions in alliances are factors that affect the values of  $y^{(1)}$  and  $y^{(2)}$ . As before, I will restrict my focus to two factors: the probability of the target defeating the challenger,  $p_0$ , and the defender's contribution to a war between the target and challenger,  $p_A - p_0$ .

First, in Proposition 1 when  $x^{(N)} > s_C \geq x^{(A)}$ , the defender will obtain  $y^{(1)}$  from the target. That is, when the alliance deters the challenger from making a demand, the defender will obtain  $y^{(1)}$  from the target. Recall that,  $y^{(1)} = s_T - a_T - (1 - x^{(N)})$ . One of the key factors determining the value of  $y^{(1)}$  is the size of the challenger's demand in the absence of an alliance,  $x^{(N)}$ . As the size of the challenger's demand in the absence of an alliance increases, the target will be willing to make more foreign policy concessions to ally with the defender. This is because as the size of the challenger's demand increases the target can make more foreign policy concessions to the defender and still be better off than not being allied. Therefore, since the target's probability of defeating the challenger in war,  $p_0$ , is a key factor influencing the size of the challenger's demand, it is also a key factor influencing foreign policy concessions in alliances. As the probability of the target defeating the challenger in war increases, the size of the challenger's demand will decrease. Therefore, the model suggests the



following hypothesis regarding concessions in alliances:

**Hypothesis 3:** *Increases in the probability of the target defeating the challenger,  $p_0$ , decrease the policy concessions the defender will receive from the target.*

Second, in Proposition 2 when  $x^{(A)} > s_C$ , the defender will obtain  $y^{(2)}$  from the target. That is, when the alliance does *not* deter the challenger from making a demand, the defender will obtain  $y^{(2)}$  from the target. Recall that,  $y^{(2)} = (1 - x^{(A)}) - a_T - (1 - x^{(N)})$ . The key factor determining the value of  $y^{(2)}$  is how much the the challenger's demand is reduced by alliance formation. In these cases the target compares the challenger's demand for when the target and defender are *not* allied,  $x^{(N)}$ , and when they are allied,  $x^{(A)}$ . How much the challenger's demand is reduced by alliance formation is determined by the defender's contribution to a war between the target and challenger. As mentioned before, this is captured by  $p_A - p_0$  in the model. As this increases the target can make more policy concessions to the defender and still be better off than not being allied. Therefore, the model suggests the following hypothesis regarding concessions in alliances:

**Hypothesis 4:** *Increases in the defender's contribution to a war between the target and challenger,  $p_A - p_0$ , increase the policy concessions the defender will receive from the target.*

### 3.3 Discussion

Hypotheses 1 and 2 identify states we should expect to see form alliances if threatened members are making policy concessions. Both of these hypotheses are consistent with other three actor alliance formation models in the literature that assume alliance formation is costly (Morrow 1994, Smith 1995, 1998). However, neither hypothesis

has been appropriately tested in the literature. Existing alliance formation research designs are not adequate to test these hypotheses. This is because existing research designs ignore the characteristics of challengers and it is clear from these hypotheses that the characteristics of the challenger are key to alliance formation. Whether the target prefers to have an alliance depends on the target's capabilities relative to the challenger's capabilities and whether the target prefers to ally with a potential defender depends on how that defender's capabilities changes the relative capabilities of the target and challenger. Therefore, in the next chapter I develop a research design that can take into account all three of these actors and provide the first test of these key alliance formation hypotheses.

Hypotheses 3 and 4 identify the level of concessions we should expect states to make when they form alliances. These hypotheses refine the conventional wisdom. It is typically argued that the strongest states are the ones that form alliances to obtain policy concessions and that the weakest states make policy concessions for the protection of the strong state (Morrow 1991, Palmer and Morgan 2006). However, it is clear from these hypotheses that this is not always the case. Some strong states will want to make concessions for alliances and not all weak states will want to make concessions for alliances depending upon the strength of their challengers. To test these hypotheses we need a measure of policy concessions among allies. Therefore, in chapter 5 I develop a measure of policy concessions among allies based on the content of their alliance agreement and provide a test of these hypotheses using the research design developed in the next chapter.

### 3.4 Appendix

The equilibrium solution I use to solve the game is Subgame Perfect Equilibrium. Given the nature of the game, I solved it by backward induction. Below I sketch the solution.

I begin by evaluating the Target's decision if the Challenger makes a demand. I do this for the case where the Target and the Defender do not form an alliance and the case where they do form an alliance. First, if the Target and the Defender do not form an alliance the target will accept the Challenger's demand if  $1 - x \geq p_0 - c_T$ . Therefore, the Target will accept the Challenger's demand if

$$x \leq 1 - p_0 + c_T. \quad (3.1)$$

Let  $x^{(N)} = 1 - p_0 + c_T$ .

Second, if the Target and the Defender do form an alliance the Target will accept the Challenger's demand if  $1 - x - a_T - y \geq p_A - c_T - a_T - y$ . Therefore, the Target will accept the Challenger's demand if

$$x \leq 1 - p_A + c_T. \quad (3.2)$$

Let  $x^{(A)} = 1 - p_A + c_T$ .

Next, I consider the Challenger's decision for the case where the Target and the Defender do not form an alliance and the case where they do form an alliance. In both cases the Challenger can make a demand or choose to make no demand. First, if the Target and the Defender do not form an alliance the challenger will never make a demand  $x > x^{(N)}$  because  $1 - p_0 + c_T > 1 - p_0 - c_C$ . As a result,  $1 - p_0 + c_T$  is the best outcome for the Challenger if it makes a demand when the Target and the

Defender do not form an alliance. Therefore, the Challenger will demand  $x^{(N)}$  if

$$x^{(N)} > s_C. \quad (3.3)$$

Second, if the Target and the Defender do form an alliance, the best outcome for the Challenger if it makes a demand is  $1 - p_A + c_T$ . This is because  $1 - p_A + c_T > 1 - p_A - c_C$ . Therefore, the Challenger will demand  $x^{(A)}$  if

$$x^{(A)} > s_C. \quad (3.4)$$

Now I consider the Target's decision to accept or reject an alliance proposed by the Defender. This is dependent upon what the Target expects the Challenger to do which is dependent upon the value of the status quo to the Challenger,  $s_C$ . There are three cases to consider. First, when  $s_C \geq x^{(N)}$  the Challenger never makes a demand. This is because the status quo is better for the Challenger than any demand it will have accepted. Therefore, in this first case, the Target rejects any alliance proposed by the Defender because  $s_T > s_T - a_T - y$ .

Second, when  $x^{(N)} > s_C \geq x^{(A)}$  the Challenger makes a demand if there is no alliance but the Challenger will not make a demand if there is an alliance. This is because the status quo is better for the Challenger than the demand it will have accepted if the Target and Defender form an alliance. However, it is not better than the demand it will have accepted if the Target remains unallied. Therefore, in this second case, the Target accepts an alliance proposed by the Defender if  $s_T - a_T - y \geq 1 - x^{(N)}$ . That is, the Target will accept an alliance proposed by the Defender when

$$y \leq s_T + x^{(N)} - 1 - a_T. \quad (3.5)$$

Let  $y^{(1)} = s_T + x^{(N)} - 1 - a_T$ .

Third, when  $x^{(A)} > s_C$  the Challenger always makes a demand. This is because any demand the Challenger can have accepted is better than the status quo for the Challenger. It will demand  $x^{(A)}$  if the Target and the Defender form an alliance and it will demand  $x^{(N)}$  if the Target and the Defender do not form an alliance. Therefore, in this third case, the Target accepts an alliance proposed by the Defender if  $1 - x^{(A)} - a_T - y \geq 1 - x^{(N)}$ . That is, the Target will accept an alliance proposed by the Defender when

$$y \leq x^{(N)} - x^{(A)} - a_T. \quad (3.6)$$

Let  $y^{(2)} = x^{(N)} - x^{(A)} - a_T$ .

Finally, consider the Defender's decision to propose an alliance to the Target in all three cases. First, when  $s_C \geq x^{(N)}$  the Defender will propose  $y = 0$ . This is because the Challenger will never make a demand and the Target will never accept an alliance. Therefore, anticipating this, the Defender proposes that the Target makes no policy concessions.

Second, when  $x^{(N)} > s_C \geq x^{(A)}$  the Challenger only makes a demand if there is no alliance and the Defender compares  $\beta(1 - x^{(N)})$  and  $\beta s_T - a_D + y$ . Under this condition the highest level of policy concessions the Defender can obtain from the Target is  $y^{(1)}$ . Therefore, the Defender will propose  $y^{(1)}$  when

$$y^{(1)} > \beta(1 - x^{(N)}) - \beta s_T + a_D. \quad (3.7)$$

Let  $y^{(3)} = \beta(1 - x^{(N)}) - \beta s_T + a_D$ . If  $y^{(1)} \leq y^{(3)}$  the Defender will propose  $y > y^{(1)}$  and have the alliance rejected by the Target. In this case the Challenger will make a

demand and the Defender will receive  $\beta(1 - x^{(N)})$ .

Third, when  $x^{(A)} > s_C$  the Challenger always makes a demand and the Defender compares  $\beta(1 - x^{(N)})$  and  $\beta(1 - x^{(A)}) - a_D + y$ . Under this condition the highest level of foreign policy concessions the Defender can obtain from the Target is  $y^{(2)}$ . Therefore, the Defender will propose  $y^{(2)}$  when

$$y^{(2)} > \beta(1 - x^{(N)}) - \beta(1 - x^{(A)}) + a_D. \quad (3.8)$$

Let  $y^{(4)} = \beta(1 - x^{(N)}) - \beta(1 - x^{(A)}) + a_D$ . If  $y^{(2)} \leq y^{(4)}$  the Defender will propose  $y > y^{(2)}$  and have the alliance rejected by the Target. In this case the Challenger will make a demand and the Defender will receive  $\beta(1 - x^{(N)})$ .

This discussion provides the unique subgame perfect equilibrium of the game:

- T: Given no alliance, accept if  $x \leq x^{(N)}$ ; otherwise reject.  
 Given an alliance, accept if  $x \leq x^{(A)}$ ; otherwise reject.
- C: Given no alliance, demand  $x^{(N)}$  if  $x^{(N)} > s_C$ ; otherwise make no demand.  
 Given an alliance, demand  $x^{(A)}$  if  $x^{(A)} > s_C$ ; otherwise make no demand.
- T: Given  $s_C \geq x^{(N)}$ , reject any  $y$ .  
 Given  $x^{(N)} > s_C \geq x^{(A)}$ , accept if  $y \leq y^{(1)}$ ; otherwise reject.  
 Given  $x^{(A)} > s_C$ , accept if  $y \leq y^{(2)}$ ; otherwise reject.
- D: Given  $s_C \geq x^{(N)}$ , propose  $y = 0$ .  
 Given  $x^{(N)} > s_C \geq x^{(A)}$ , propose  $y^{(1)}$  if  $y^{(1)} > y^{(3)}$ ; otherwise propose  $y > y^{(1)}$ .  
 Given  $x^{(A)} > s_C$ , offer  $y^{(2)}$  if  $y^{(2)} > y^{(4)}$ ; otherwise propose  $y > y^{(2)}$ .

The unique subgame perfect equilibrium of the game produces four possible out-

comes.<sup>2</sup> In the first outcome the Target and Defender do *not* ally and the Challenger does *not* make a demand. This occurs when the largest demand the Challenger can have accepted by the Target is worse than the status quo for the Challenger,  $x^{(N)} \leq s_C$ . When this is true the Challenger has no incentive to make a demand and, as a result, the Target has no incentive to pay the costs of alliance formation.

In the second outcome the Target and Defender do *not* ally, the Challenger makes a demand, and the Target accepts the Challenger's demand. This occurs when the Challenger is better off making a demand and the Target is not willing to make the amount of concessions the Defender needs to benefit from allying with the Target. In terms of the model, this outcome occurs when  $x^{(N)} > s_C \geq x^{(A)}$  and  $y^{(1)} \leq y^{(3)}$  or  $x^{(A)} > s_C$  and  $y^{(2)} \leq y^{(4)}$ . In this outcome the cost of security is too high and the Target would prefer to accede to the Challenger's demand than make concessions to the Defender.

In the third outcome the Target and Defender ally and the Challenger does *not* make a demand. This occurs when an alliance between the Target and Defender makes it so the Challenger is unable to benefit from making a demand of the Target and the Target is willing to make the amount of concessions the Defender needs to benefit from allying with the Target. In terms of the model, this outcome occurs when  $x^{(N)} > s_C \geq x^{(A)}$  and  $y^{(1)} > y^{(3)}$ . In this outcome the Target is willing to make concessions to the Defender in return for an alliance that will prevent the Challenger from making a demand.

---

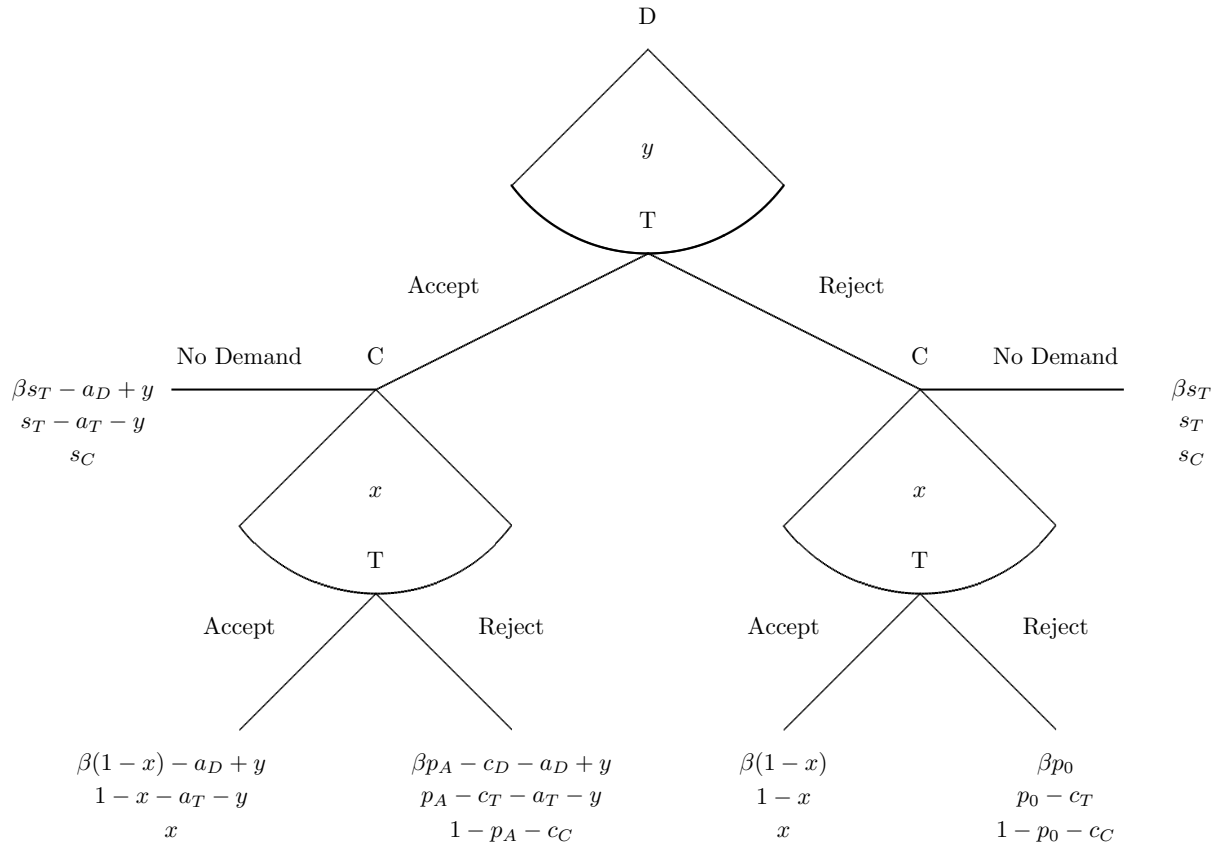
<sup>2</sup>War is not an outcome in this version of the model. This is because I assume complete information. If the Challenger makes a demand, it is always able to make the largest demand the Target is willing to accept and avoid the costs of war. However, as Fearon (1995) shows, if there was uncertainty about the Target's costs of war or probability of winning, war would be a possible outcome. I chose to exclude this possibility because it will complicate the model without changing the conclusions of the paper.

In the fourth outcome the Target and Defender ally, the Challenger makes a demand, and the Target accepts the Challenger's demand. This occurs when the Challenger can benefit from making a demand of the Target, regardless if it is allied to the Defender, and the Target is willing to make the amount of concessions the Defender needs to benefit from allying with the Target. In terms of the model, this outcome occurs when  $x^{(A)} > s_C$  and  $y^{(2)} > y^{(4)}$ . In this outcome the Target is willing to make concessions to the Defender in return for an alliance that will reduce the size of the Challenger's demand from  $x^{(N)}$  to  $x^{(A)}$ .



### 3.5 Figures

Figure 3.1 : A Bargaining Model of Alliance Formation and War



## Chapter 4

### An Empirical Analysis of Alliance Formation

This chapter evaluates the causes of alliance formation. More specifically, it evaluates Hypotheses 1 and 2 which were derived from the three actor model of alliance formation developed in chapter 3. The hypotheses suggest that the characteristics of three actors are important for alliance formation: a defender, target, and challenger. Therefore, in this chapter I present a novel research design that takes into account the characteristics of all three of these actors. I then report the results of the analysis and show that the variables suggested by the theoretical model in chapter 3 have important influences on alliance formation.

#### 4.1 Research Design

The theory developed in chapter 3 suggests the characteristics of a defender, target, and challenger need to be considered. Therefore, the standard dyad-year or directed dyad-year research design is not appropriate for evaluating the implications of the theory. I will define the unit of analysis for this research design as an alliance formation opportunity. An alliance formation opportunity is a case where a defender and target have an opportunity to form an alliance to defend against a particular challenger in a given year. As a result of data availability, the analysis includes alliance formation opportunities during the period from 1816 to 2000. I will now describe how I determine the sample of alliance formation opportunities.

First, the theory suggests that the target and challenger are a pair of states that have a dispute over some good. Therefore, to identify targets and challengers I need to identify pairs of states that have a dispute over some good. One of the most prominent disputed goods in the international system is territory. Furthermore, there is systematic data available that identifies territorial disputes among states. As a result, I identify targets and challengers as states involved in territorial disputes.<sup>1</sup> Targets are those states that control the territory and challengers are those states that are making claims to the territory and seek to change the status quo.<sup>2</sup>

I utilize two data sets on territorial disputes. The first is data from the Issue Correlates of War (ICOW) project (Hensel 2001). These data identify territorial disputes in the Americas and Western Europe from 1816 to 2001. The second is Huth and Allee's (2003) data on territorial disputes which covers all regions of the world from 1919 to 1995. Combining these data provide me with a larger spatial and temporal domain than using either data individually. These data sets produce 12,029 directed dyad-years with territorial disputes. The ICOW project contributes 6,462 unique directed dyad-years, Huth and Allee's data contribute 3,901 unique directed dyad-years, and both data sets contribute 1,666 directed dyad-years.

Second, after identifying a sample of targets and challengers, I identify a set of defenders. The only assumption that the theory makes about the nature of the defender is that it will benefit from gaining foreign policy concessions from the target. Assuming all states prefer gaining more concessions to less concessions, this can be any

---

<sup>1</sup>Certainly territory is only one of the many goods states dispute over. Therefore, this research design decision is undercounting the number of cases where the theoretical model is applicable.

<sup>2</sup>A state can be the target of multiple territorial disputes in a given year. The maximum number is 16. Between 1951 and 1959 the United Kingdom is the target of 16 territorial disputes. However, the most frequent case is that a state is the target of only one territorial dispute in year. As a robustness check, I estimated the empirical model controlling for the number of territorial disputes the target was involved in and the interpretation of the results did not change.

state in the international system. Therefore, each directed dyad-year in a territorial dispute is paired with each state in the international system during that year.<sup>3</sup> This expands the data to 1,106,912 observations.

These steps produce a sample of alliance formation opportunities in which a defender and target have an opportunity to form an alliance to defend against a particular challenger in a given year. I will now describe how I code the dependent variable, alliance formation, and operationalize the concepts that the theory suggests cause alliance formation.

#### **4.1.1 Coding Alliance Formation**

The dependent variable for this analysis codes whether the defender and target form an alliance in a given year. The variable is coded “0” if the defender and target do not form an alliance and it is coded “1” if the defender and target form an alliance in a given year. To code the dependent variable I rely on data from the Alliance Treaty Obligations and Provisions (ATOP) project (Leeds et al. 2002). More specifically, I rely on the alliance member level data from ATOP. It provides information regarding entry and exit dates for each alliance member for every alliance in the data set. Furthermore, as discussed in chapter 2, I only consider alliances with defensive obligations. This is because these are the only alliances that require the defender to assist the target if it is attacked by the challenger. Other types of alliances are outside the theory. I will now discuss some issues that need to be addressed when coding alliance formation.

---

<sup>3</sup>As will be discussed later, observations where the target and defender are already allied are dropped.

First, some alliances are bilateral while other alliances are multilateral.<sup>4</sup> The coding procedure for bilateral alliance agreements is straightforward: the dyad forming the alliance is coded as having an instance of alliance formation for the year the alliance was formed. Multilateral alliance agreements pose some issues for coding alliance formation. For purposes of this analysis, I consider all possible dyads among the members of the multilateral alliance to have an instance of alliance formation. With regards to states that accede to the alliance agreement after the year the alliance was formed, I consider them to be forming an alliance with all members of the multilateral alliance agreement.<sup>5</sup>

Second, many alliances identify specific conditions under which the alliance is invoked.<sup>6</sup> For example, some alliances will only be invoked when a member is attacked by a particular state. This suggests that some defensive alliances should have no influence on the bargaining between a target and challenger. More specifically, one would expect only alliances that are invoked by the challenger identified in the alliance formation opportunity to influence the bargaining between the target and challenger. Therefore, I only consider a defender and target as forming an alliance if the alliance is applicable to a conflict with the challenger in the alliance formation opportunity.

Third, many alliances involve asymmetric promises.<sup>7</sup> That is, some alliance members promise to defend other members while other members do not make the same promise. One would expect that only alliances where the target is promised defensive support should increase the target's capabilities and influence the bargaining between

---

<sup>4</sup>There are 200 bilateral and 63 multilateral alliances with defensive obligations in the ATOP data.

<sup>5</sup>As a robustness check, I estimate the results when these observations are not considered instances of alliance formation and the interpretation of the results does not change.

<sup>6</sup>118 of the 263 defensive alliances in the ATOP data identify specific conditions under which the alliance is invoked.

<sup>7</sup>74 of the 263 defensive alliances in the ATOP data include asymmetric promises.

the target and challenger. Therefore, I only consider a defender and target as forming an alliance if the defender promises defensive support to the target.

Finally, once a pair of states form an alliance against a challenger there is usually no need for them to form another alliance against the same challenger. Therefore, once a defender and target have formed an alliance against a particular challenger I exclude that observation from the sample of alliance formation opportunities. The observation is included in the sample of alliance formation opportunities once the alliance ends. However, it is true that some dyads have multiple alliance agreements in a given year; I do not consider additional alliance agreements as being instances of alliance formation.<sup>8</sup> Removing the allied observations leaves 1,016,515 alliance formation opportunities.

The alliance formation coding procedure generates 3,709 alliance formation opportunities where the defender formed an alliance with the target. I will now discuss the operationalization of the concepts that theory suggests cause alliance formation.<sup>9</sup>

#### 4.1.2 Operationalizing the Concepts

The theory suggests alliance formation is the function of two factors: the probability of the target defeating the challenger,  $p_0$ , and the defender's contribution to a war between the target and challenger,  $p_A - p_0$ . Hypothesis 1 suggests that increases in the probability of the target defeating the challenger will decrease probability of alliance formation. Hypothesis 2 suggests that increases in the defender's contribution to a war between the target and challenger will increase the probability of alliance for-

---

<sup>8</sup>I also do not consider new phases of alliance agreements, which are renegotiations of the alliance terms, to be instances of alliance formation.

<sup>9</sup>This procedure captures 40% of the alliances with defensive obligations in the ATOP data. The other 60% are formed in cases that are not captured by the data on territorial disputes or cases where the target and defender are already allied.

mation. I use different functions of the actors' military capabilities to operationalize both of these concepts. The actors' composite index of national capabilities (CINC) scores from the Correlates of War (COW) project are used to measure their military capabilities (Singer et al. 1972).<sup>10</sup> I describe both measures in detail below.

First, to operationalize the probability of the target defeating the challenger in war I use a ratio of the target's and challenger's military capabilities. More specifically, I utilize the following expression:

$$\frac{cap_T}{cap_T + cap_C}$$

which is the ratio of the target's military capabilities to the sum of the target's and challenger's military capabilities. This variable is always between 0 and 1 where values closer to 1 indicate higher probabilities of the target defeating the challenger in war. For example, the value of this variable for the claim over the Falkland Islands by Argentina against the United Kingdom is .80 in 2001. The measure indicates that the probability of the United Kingdom defeating Argentina in a war in 2001 is .8. Figure 4.1 shows the distribution of this variable. Hypothesis 1 suggests the coefficient associated with this variable should be negative.

Second, to operationalize the defender's contribution to a war between the target and challenger I use a measure of how much more likely the target will be to win a war against challenger with the assistance of the defender than without the assistance of the defender. In other words, the measure compares the likelihood of the defender and the target defeating the challenger in a multilateral war to the likelihood of the target defeating the challenger in a bilateral war. More specifically, I utilize the following

---

<sup>10</sup>More specifically, I use a one year lag of the actors' CINC scores to ensure that alliance formation is not influencing the value of my key independent variables.

expression:

$$\frac{cap_T + cap_D}{cap_T + cap_D + cap_C} - \frac{cap_T}{cap_T + cap_C}$$

which is the ratio of the sum of the capabilities of the target and the defender to the sum of the capabilities of the target, the defender, and the challenger minus the ratio of the capabilities of the target to the sum of the capabilities of the target and the challenger.<sup>11</sup> This variable is always between 0 and 1 where values closer to 1 indicate larger defender contributions. For example, in 1954 Pakistan had a .18 probability of defeating India if their territorial dispute provoked a war. However, after allying with the United States in 1954 Pakistan had a .97 probability of defeating India in a war. Therefore, the contribution of the United States in this observation is .69. Figure 4.2 shows the distribution of this variable. It can be seen that most defender's would contribute very little to a war between the target and challenger. Hypothesis 2 suggests the coefficient associated with this variable should be positive.

### 4.1.3 Control Variables and Estimation

In addition to including measures of the two key concepts in the statistical model, I try to take into account a number of other factors that the model suggests may be important for alliance formation. Several of the factors are related to the target's relationship with the defender and several of the factors are related to the target's relationship with the challenger. I will discuss these factors in more detail.

First, I control for several factors about the relationship between the target and

---

<sup>11</sup>This measure assumes that the defender will use all of its capabilities to defend the target. Obviously, this is unlikely except in very rare instances. However, if there is a proportional discount across all of the observations this is not problematic for this analysis. If there is variance across observations then this will introduce noise in the data and make it harder to find a relationship between this variable and alliance formation.



defender that should influence whether the two states want to form a military alliance. The first factor is distance between the two states. The model assumes that the defender is able to defend the target and has some interest in the target's dispute. However, if the defender is further away it should be less able to defend the target and possibly less interested in disputes involving the target. As a result, the target and defender should be less likely to form an alliance as the distance between them increases. Therefore, I include the natural log of the capital-to-capital distance between the target and defender. The data on distance are obtained from the EUGene data generation program (Bennett and Stam 2000). I also control for the similarity in the two states' interests. The model suggests that as their interests become more aligned they will be more likely to ally because the defender will require fewer concessions to benefit from the alliance. To measure similarity of interests I include the target and defender's S-score (Signorino and Ritter 1999).<sup>12</sup> As this variable increases, the two states' interests are considered to be more similar. Finally, I include a measure of the target's military capabilities. This is because the model assumes that the security benefit of alliances works through capability aggregation. Therefore, as the target's military capabilities increases it will become a more desirable alliance partner to other states in pursuit of security. As before, CINC scores are used to measure the target's military capabilities (Singer et al. 1972).<sup>13</sup>

Second, I control for factors associated with the relationship between the target and challenger. Two of the variables take into account other outside alliances the two states have. These variables are important because they are additional factors

---

<sup>12</sup>More specifically, I include a one year lag of the two states' S-score to ensure that alliance formation is not influencing the value of this variable.

<sup>13</sup>More specifically, I use a one year lag of the target's CINC score to ensure that alliance formation is not influencing the value of this variable.

that will influence the probability of each side winning in a war. One variable codes the number of alliances that the target has that have agreed to defend it against the challenger. As this number increases the target will be less likely to need to ally with the defender. The other variable codes the number of alliances that the challenger has that have agreed to assist in attack against the target. As this number increases the target will be more likely to need to ally with the defender. Both of these variables were coded using the data on relevant alliances from Johnson and Leeds (2011) which is based on information from the ATOP data. The last variable codes whether the target and challenger are contiguous. If they are contiguous one may argue that the challenger poses a more immediate or severe threat. This will make the value of the status quo more valuable to the target and will make it more likely to ally with the defender. The data on contiguity are also obtained from the EUGene data generation program (Bennett and Stam 2000).

Since the dependent variable is dichotomous, I use logit regression to estimate the results. However, standard logit regression assumes that there is no temporal dependence in the data and this is unlikely given the time series component of the research design. Therefore, to control for any possible temporal dependence in the data I use the strategy suggested by Carter and Signorino (2010).<sup>14</sup> I include a variable that codes the number of years since the target and defender formed an alliance against the challenger. Then I also include the square and cube of this variable to allow for a flexible functional form.

One final point is that I also estimate three separate models when evaluating the hypotheses. This is because of the relationship between the two key independent

---

<sup>14</sup>The interpretation of the results do not change when temporal dependence is not taken into account.

variables. More specifically, the measure of the defender's contribution is a function of the target's probability of winning and it is possible that these two variables influence the coefficient estimates for one another.<sup>15</sup> Therefore, I estimate the model with the two variables alone and then together. After including the information for all of the independent variables there are 983,910 observations remaining in the data.

## 4.2 Results

The results of the analysis are reported in Table 4.1. The first thing to check is to see if most of the coefficients for the control variables are in the expected direction. This is because the research design is not standard and we want to see if factors that we typically think influence alliance formation are associated with alliance formation in the manner we would expect. In general, this is the case. Targets form alliances with defender's that are closer in distance and have similar interests. Targets are also more likely to ally when they have more military capabilities. The nature of the conflict with the challenger is also important for the target's propensity to ally. Targets are more likely to ally as the number of alliances the challenger has increases and if the challenger is contiguous. The one result that is unexpected is that targets are more likely to ally as the number of alliances they have increases. This could be because these targets have an unusually high level of threat and require multiple allies. The fact that all but one variable has the expected effect on alliance formation provides confidence in the research design.

I now turn to the two alliance formation hypotheses derived in chapter 3. Hypothesis 1 suggests that the target will be less likely to ally with the defender as its probability of defeating the challenger in war increases. This is because as this

---

<sup>15</sup>The correlation of these two variables is -.33.

probability increases the challenger will be unwilling to make a demand of the target and the target will have no incentive to make concessions to ally with the defender. This hypothesis is supported by the results in Table 4.1. The measure of the target's probability of winning is associated with a negative coefficient.

Hypothesis 2 suggests that the target will be more likely to ally with the defender as the defender's contribution to a war between the target and challenger increases. This is because only when the defender can significantly influence the challenger's demand is alliance formation worthwhile to the target and defender. This hypothesis is also supported by the results in Table 4.1. The measure of the defender's contribution is associated with a positive coefficient.

In addition to knowing whether these factors have the expected effect on alliance formation, it is important to know whether their effects are substantively meaningful. It could be the case that these variables have significant coefficients but have very small effects on alliance formation. Substantive effects of these variables are reported in Table 4.2. It shows the percentage change in alliance formation associated with increases in the key variables from one standard deviation below their means to one standard deviation above their means. The first column shows that this change in the target's probability of winning reduces alliance formation by approximately 22%. The second column shows that this change in the defender's contribution increases alliance formation by approximately 17%.

### 4.3 Discussion

In this chapter I have tested two implications of the model presented in chapter 3. More specifically, I tested Hypotheses 1 and 2 which are related to alliance formation. Hypothesis 1 suggests that states will be willing to make concessions to ally when

they are less likely to defeat their challengers alone. Hypothesis 2 suggests that states will only be willing to make concessions to ally with states that will have a large effect on their probability of winning wars against their challengers. The empirical results provide support for these two hypotheses and suggest that the key variables have important influences on states' alliance formation decisions.

While the results reported in this chapter are central to the theoretical model, they are consistent with any approach that suggests alliance formation is costly. The results do not show that the costs of alliance formation come in the form of policy concessions. To evaluate this aspect of the model one must test the second set of hypotheses, Hypotheses 3 and 4. If we can find evidence that states are making policy concessions in a manner that is consistent with the theoretical model, this will provide strong evidence that the model is useful and that policy concessions are central to alliance formation. Therefore, to test Hypotheses 3 and 4, in the next chapter I develop a measure of policy concessions among allies and analyze the set of observations where an alliance was formed.

## 4.4 Figures

Figure 4.1 : Distribution of the Target's Probability of Winning

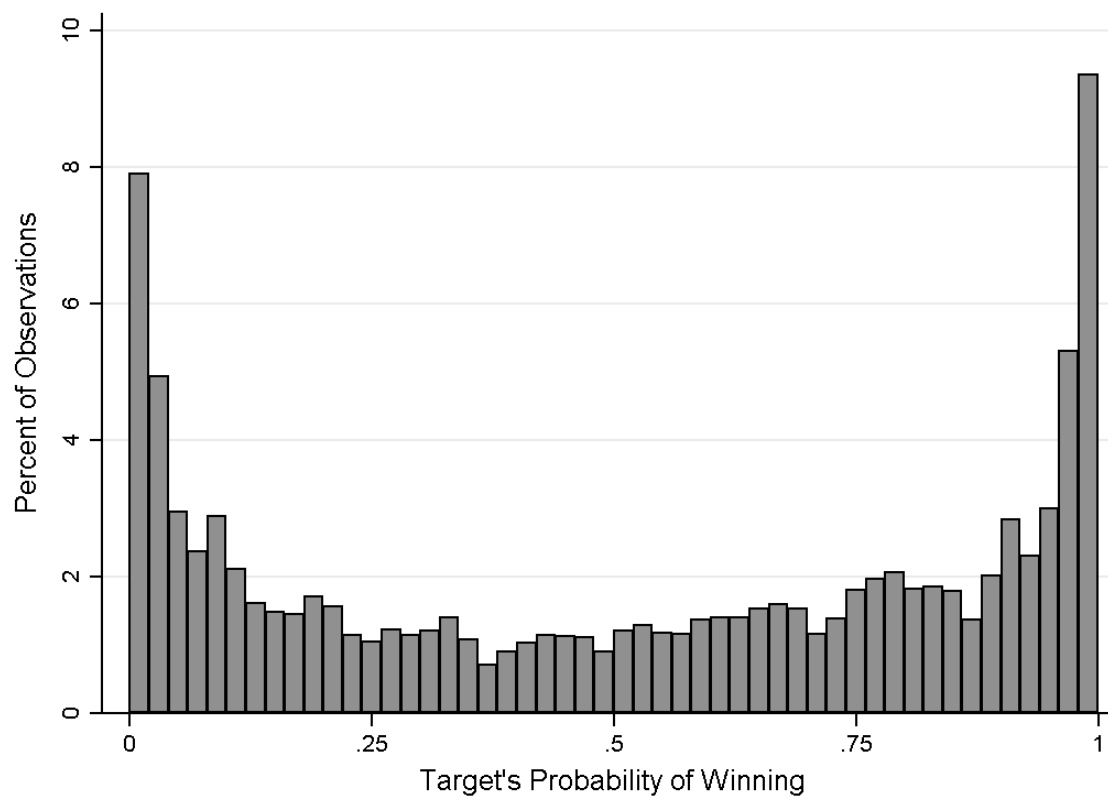
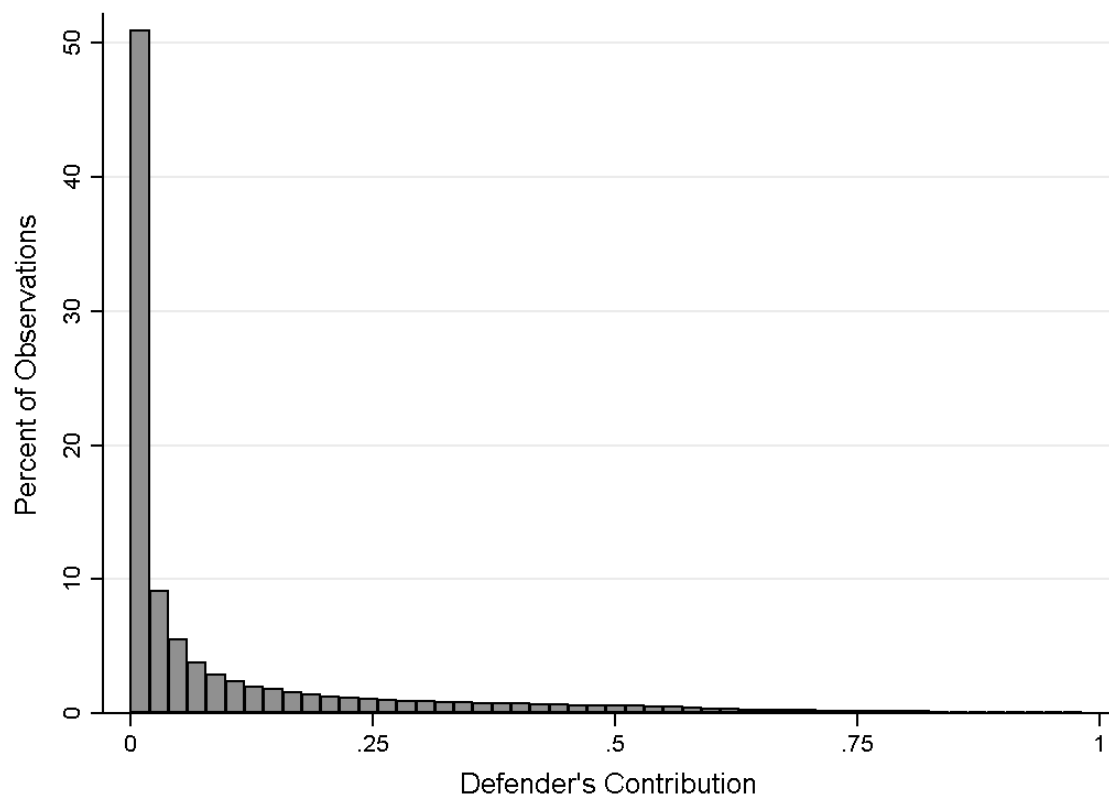


Figure 4.2 : Distribution of the Defender's Contribution



## 4.5 Tables



Table 4.1 : Logit Regression of Alliance Formation

	(1)	(2)	(3)
Target's Probability of Winning	−.35** (.06)		−.31** (.06)
Defender's Contribution		.47** (.12)	.31** (.12)
Defender's Distance from the Target	−.77** (.02)	−.77** (.02)	−.77** (.01)
Similarity of Interests	.76** (.10)	.76** (.10)	.78** (.10)
Target's Military Capabilities	5.44** (.24)	4.97** (.22)	5.50** (.24)
Target's Number of Alliances	.03** (.01)	.03** (.01)	.03** (.01)
Challenger's Number of Alliances	.35** (.03)	.39** (.03)	.35** (.03)
Target-Challenger Contiguity	.12** (.04)	.11** (.04)	.11** (.04)
Constant	.18 (.16)	−.02 (.16)	.13 (.16)
Observations	983,910	983,910	983,910

Standard errors in parentheses

Two-tailed tests: \*\* p<0.01, \* p<0.05

Alliance Years, (Alliance Years)<sup>2</sup>, (Alliance Years)<sup>3</sup> included in estimation

Table 4.2 : Alliance Formation Percentage Change

Independent Variable	Change in IV	Change in DV
Target's Probability of Winning	.15 to .85	−22% [−15%, −28%]
Defender's Contribution	.01 to .35	17% [8%, 27%]

## Chapter 5

### An Empirical Analysis of Foreign Policy Concessions in Military Alliances

This chapter analyzes foreign policy concessions in alliances. More specifically, it evaluates Hypotheses 3 and 4 which were derived from the model of alliance formation developed in chapter 3. The hypotheses identify factors that are expected to influence a target's willingness to make policy concessions to a defender. To evaluate the hypotheses I develop an indicator of foreign policy concessions in military alliances. I do this by taking advantage of the fact that states formalize concessions in alliance treaties.

#### 5.1 Research Design

The core of this research design is very similar to the research design developed in the previous chapter. That is, this research design identifies a defender, target, and challenger. Furthermore, the actors are identified by the same process as outlined before. The main difference is that the sample used in this research design only includes alliance formation opportunities where the defender and target formed an alliance.<sup>1</sup> This is because this set of hypotheses are about the level of foreign policy concessions the defender will receive from the target when an alliance is formed. These

---

<sup>1</sup>One other difference is that observations where the target entered a multilateral alliance are treated as one observation instead of being split into multiple bilateral alliances with each ally. However, the hypotheses are supported if the multilateral alliances are split into multiple observations.

adjustments to the data leave 641 observations to test Hypotheses 3 and 4. I will now introduce the measure of policy concessions made by the target to the defender.

### 5.1.1 Measuring Foreign Policy Concessions

When a state makes a concession it is giving up some of its ability to determine its own policies. In other words, it is promising to restrict its future behavior in a way that can benefit the state requesting the concession. Furthermore, states sometimes formalize concessions in alliance treaties. When states form alliances they write down specific promises that they make to one another. For example, when states entered into the Warsaw Pact with the Soviet Union in 1955, they agreed “not to participate in any coalitions or alliances, and not to conclude any agreements, the purposes of which are incompatible with the purposes of the present Treaty” (United Nations 1955). Essentially, these states became protected by the Soviet Union in return for promising not to ally with other European powers or the United States.

Therefore, to generate a measure of policy concessions among allies I rely on the concessions formalized in alliances treaties. To identify the concessions I use information from the member level data of the Alliance Treaty Obligations and Provisions (ATOP) project (Leeds et al. 2002). When identifying concessions I do not include promises that can increase the security of the target. This is because these promises may not be evidence of targets paying costs for promises of defense.<sup>2</sup> Table 5.1 provides each of the concessions that contribute to the dependent variable as well as the number (percent) of observations where targets made the specific concession.

There are several categories of concessions in Table 5.1. The first three concessions

---

<sup>2</sup>For example, some targets allow their alliance partners to put military bases on their territory. Having these military bases may actually be desirable to targets because they increase their alliance partners ability to defend them in even of military conflict.

are instances where the target promised to restrict its relations with third parties. This can benefit defenders who have ongoing disputes with other states and would prefer if the target did not assist those states or even took actions against those states. The next three concessions are instances where the target promised to pursue specific policies that can benefit the defender. For example, Jordan granted the United Kingdom most-favored nation treatment in a set of defense pacts formed between the two states in 1946 and 1948 (Leeds et al. 2002). The final four concessions are instances where the target promised the defender some influence over its policymaking.<sup>3</sup> For example, defenders may try to influence the target's policies by requiring consultation before making third party commitments or having some control over the target's military forces.

This process identifies a set of concessions promised by targets of territorial disputes but the theoretical model predicts the level of concessions made by targets. Therefore, I need to convert these 10 concessions into a level of concessions made by the target. To do this I count the number of concessions targets of territorial disputes commit to when they form alliances. I assume that a larger count indicates a greater restriction on a state's future policy autonomy, which I equate with a higher level of concessions. Using a count of the concessions also assumes that each of the concessions is weighted equally. While this is unlikely there is not an obvious weighting scheme for this set of concessions. The weight of each concession is likely to vary across targets and over time. Not knowing the true weight of each concession is a potential source of noise in the data that could make finding empirical support for the theoretical model more difficult.

---

<sup>3</sup>As will be shown later, I also estimate the results when the dependent variable is constructed excluding these four concessions. The results are substantively similar.

While I think this measure is a good proxy for the level of concessions an alliance member makes, relying on concessions formalized in alliance treaties has one obvious limitation. It may overcount or undercount the number of concessions an alliance member makes. It could overcount the number of concessions because some promises may not be adhered to and it could undercount the number of concessions because some concessions may not be formalized in the treaties. This is another potential source of noise in the data that could make finding empirical support for the theoretical model more difficult.

Figure 5.1 provides a summary of the dependent variable. The minimum number of concessions is 0. The maximum possible number of concessions is 10 but the maximum number observed is 6. The median number of concessions is 2.

### **5.1.2 Control Variables and Estimation**

The main results reported do not include any control variables. This is because, unlike alliance formation, the key independent variables are the main variables that the theoretical model suggests are important for the level of concessions in alliances. Therefore, I present results where just the key variables are included in the statistical model. However, I also show that the results are robust to the inclusion of some additional variables.

Since I have operationalized foreign policy concessions using a count of the number of concessions targets commit to when they form alliances, I estimate the results using a poisson regression. However, given that the dependent variable is not a traditional count variable that measures the number of events that occurred in a period, I estimate the results using several other reasonable statistical models and show that the results are robust across these models. In addition, as before, I estimate

the coefficients of the two key variables separately and together since they are related.<sup>4</sup>

## 5.2 Results

The results are reported in Table 5.2. Columns 1 and 2 provide the bivariate relationships between the key independent variables and the dependent variable. Column 3 reports the results for when both variables are included in the empirical model. The estimated coefficients across all three specifications support the hypotheses.

Hypothesis 3 suggests that targets will make fewer concessions to defenders when their probability of defeating their challengers is high. The significant negative coefficients associated with the measure of the target's probability of winning support this hypothesis. Figure 5.2 provides estimates of the expected number of concessions for different probabilities of the target defeating the challenger with 95% confidence intervals. It shows that a target that is unlikely to defeat its challenger will make 2 to 3 concessions on average while a target that is most likely to win will make 1 to 2 concessions on average.

Hypothesis 4 suggests that targets will make more concessions to defenders that have a large effect on their probability of defeating their challengers. The significant positive coefficients associated with the measure of the defender's contribution support this hypothesis. Figure 5.3 provides estimates of the expected number of concessions for different values of defenders' contributions with 95% confidence intervals. It shows that a target will on average make 1 to 2 concessions to a defender that contributes very little to its probability of winning and 3 to 4 concessions to a defender that makes a significant contribution to its probability of winning.

---

<sup>4</sup>The correlation of these two variables is -.71.

### 5.2.1 Robustness

The results reported in Table 5.2 support Hypotheses 3 and 4. However, arguments can be made in opposition to several of my research design choices. Since this set of results are central to my theoretical argument, I evaluate the robustness of my results to several changes in the research design.

First, some may argue that some of the components of the dependent variable are not actually concessions. Therefore, I evaluate the robustness of the results to using a different count of concessions made by the target. More specifically, I eliminate four of the concessions that are related more to promises that can give the defender influence over the target's foreign policy but are not specific promises to behave in a certain way. For example, I remove requirements of consultation before making third party commitments and promises of regular meetings of non-military officials. While these promises can potentially give a defender influence over the target's foreign policy it does not actually suggest the target has to behave in a certain way that is beneficial to the defender. The reduced set of concessions are reported in Table 5.3 and the results of the analysis when this count is used are reported in Table 5.4. The results show that the hypotheses are still supported when this modified dependent variable is used.

Second, there may be important unmeasured factors that are biasing the results. The theoretical model presented in chapter 3 provides some guidance to what these factors may be. The model suggests that what is key to the target's decision to make concessions in exchange for an alliance is its expectations about a conflict with the challenger. Therefore, as a robustness check, I control for factors associated with the target and challenger's relationship. More specifically, I control for the number of alliances that the target has that have agreed to defend it against the challenger,



the number of alliances that the challenger has that have agreed to assist in attack against the target, and whether the target and challenger are contiguous. Increases in the first variable should decrease the number of concessions the target is willing to make and the other two variables should increase the number of concessions the target is willing to make. The coding for these variables are the same as in the previous chapter. In addition to these three variables, I also control for unmeasured factors associated with the target-challenger relationship by including a random intercept at the dispute level. The results are reported in Table 5.5. The first column reports the results with just the control variables, the second column reports the results when just including the dispute random effect, and the third column combines the two strategies. Hypotheses 3 and 4 are supported in each set of results.

Finally, I estimate the results using several different statistical models. The dependent variable is not a traditional count variable so there may be some disagreement about the appropriate statistical model. The results of this analysis are reported in Table 5.6. In the first column I estimate the results using a binomial regression. This model assumes that the dependent variable is the number of successes out of a set number of yes or no experiments (i.e., Bernoulli trials). The second column reports the results when a negative binomial regression is used. This is a general model that estimates an additional parameter to account for over-dispersed count data. In the third column, I estimate the results using logit regression. For this analysis I turned the count of concessions promised into a binary measure. This variable is coded “1” if the target agreed to any concessions when it formed the alliance “0” if it did not. Hypotheses 3 and 4 are supported when any of these three statistical models are used to estimate the results. The analyses conducted in this section provide additional confidence in the robustness of the results.

### 5.3 Discussion

In this chapter I have tested two additional implications of the model presented in chapter 3. More specifically, I tested Hypotheses 3 and 4 which are related to the level of policy concessions among allies. Hypothesis 3 suggests that states will make fewer concessions to their allies when their probability of defeating their challengers in war is high. Hypothesis 4 suggests that states will make more concessions to allies that have a large effect on their probability of defeating their challengers. The empirical results provide support for these two hypotheses and suggest that the key variables have important influences on the level of concessions made by allies.

The results reported in this chapter combined with the results reported in the previous chapter provide strong support for the theoretical model. The results suggest that the model is consistent with both observed alliance patterns and the level of policy concessions among allies. This suggests that policy concessions are central to states' alliance formation decisions and they are directly related to interstate crisis bargaining. I will discuss what this implies for our understanding of international relations in the concluding chapter.

## 5.4 Figures

Figure 5.1 : Distribution of Foreign Policy Concessions

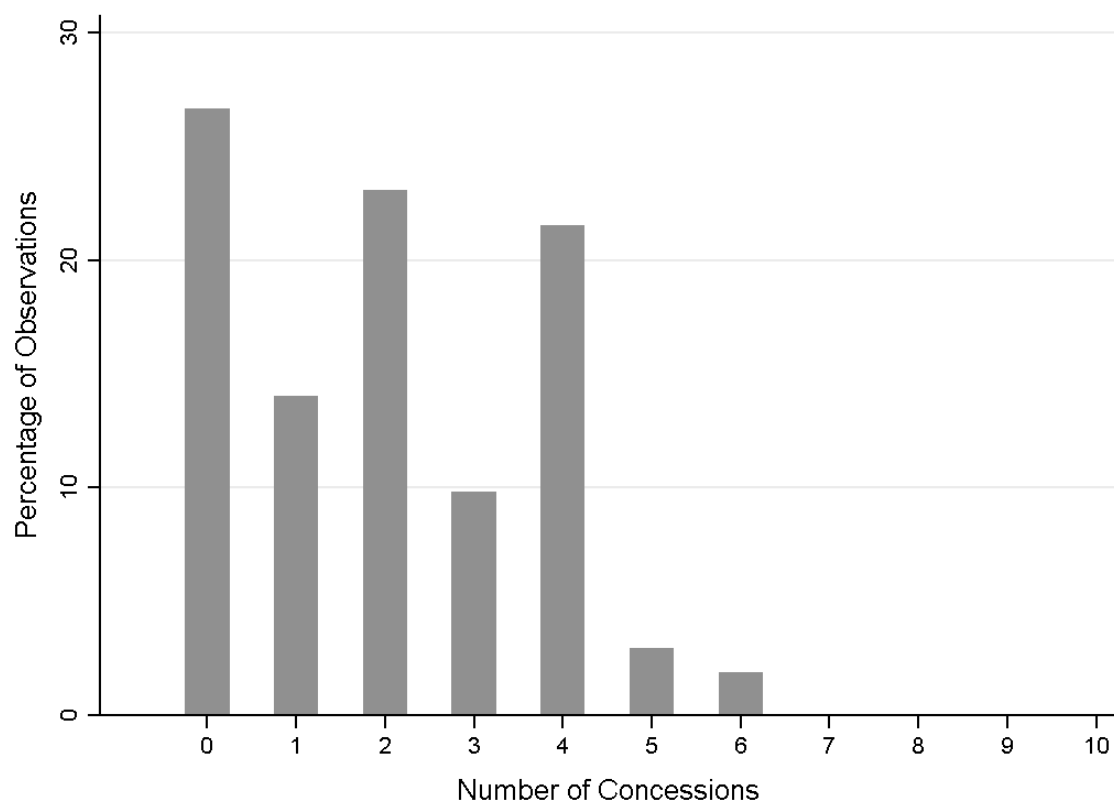
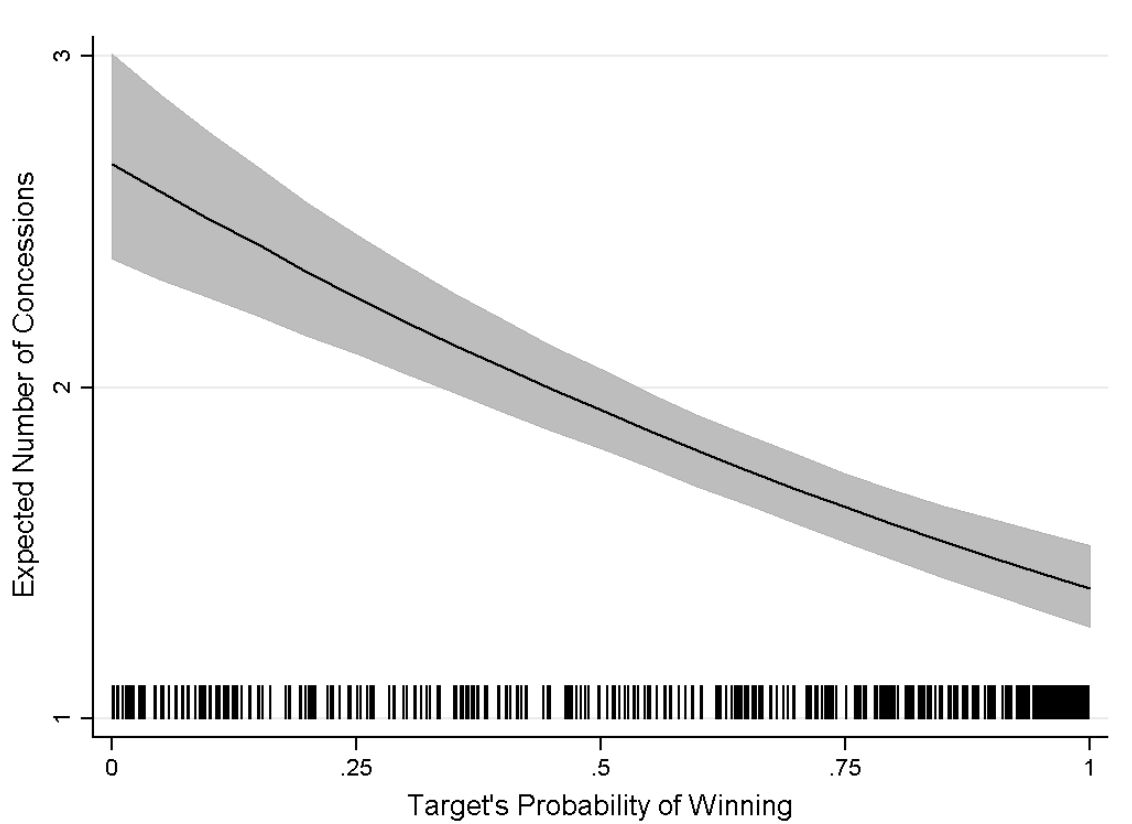
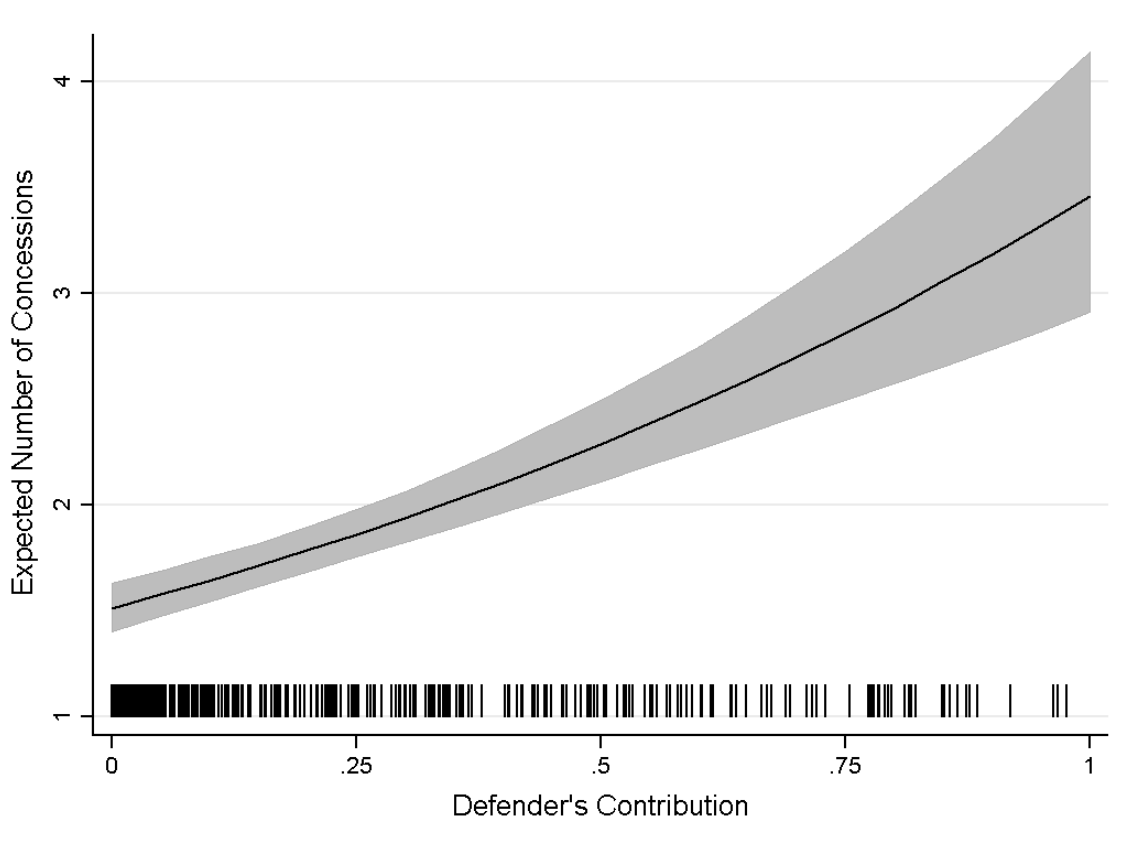


Figure 5.2 : The Effect of the Target's Probability of Winning on the Level of Concessions made by the Target



This figure graphs the expected number of concessions made by the target with 95% confidence intervals across different probabilities of the target defeating its challenger. The x-axis identifies different probabilities of the target defeating its challenger and the black ticks across the x-axis represent the distribution of this variable. The y-axis identifies the expected number of concessions made by the target. The black line represents the predictions for different probabilities of the target defeating its challenger. The gray shade around the black line provides the 95% confidence interval for each prediction. These predictions are based on 1,000 simulated parameters from the poisson model reported in column 1 of Table 5.2.

Figure 5.3 : The Effect of the Defender's Contribution on the Level of Concessions made by the Target



This figure graphs the expected number of concessions made by the target with 95% confidence intervals across different defender contributions to a war with the challenger. The x-axis identifies different defender contributions to a war with the challenger and the black ticks across the x-axis represent the distribution of this variable. The y-axis identifies the expected number of concessions made by the target. The black line represents the predictions for different defender contributions to a war with the challenger. The gray shade around the black line provides the 95% confidence interval for each prediction. These predictions are based on 1,000 simulated parameters from the poisson model reported in column 2 of Table 5.2.

## 5.5 Tables

Table 5.1 : Coded Foreign Policy Concessions

Concession	Number (%) of Observations
Did the target agree not to enter into any outside alliances or coalitions?	212 (33%)
Did the target agree not to aid any of the defender's enemies?	24 (3%)
Did the target agree to use diplomatic actions against the defender's enemies?	72 (11%)
Did the target agree to grant trade concessions to the defender?	43 (7%)
Did the target agree to peacefully resolve any existing disputed issues with the defender?	164 (26%)
Did the target agree to provisions for cooperation on non-military issues?	365 (57%)
Did the target agree not to make any commitments to non-members before consulting the defender?	27 (4%)
Did the target agree to having its forces be subordinate to the defender?	41 (6%)
Did the target agree to enter into an organization with regular meetings of government officials for non-military purposes?	193 (30%)
Did the target agree to allow the defender to intervene in its domestic politics or to not intervene in the defender's domestic politics?	144 (24%)

Table 5.2 : Poisson Regression of the Number of Concessions

	(1)	(2)	(3)
Target's Probability of Winning	-.72** (.08)		-.50** (.11)
Defender's Contribution		.88** (.10)	.41** (.15)
Constant	1.16** (.05)	.54** (.03)	.94** (.10)
Observations	641	641	641

Standard errors in parentheses

Two-tailed tests: \*\*  $p < 0.01$ , \*  $p < 0.05$

Table 5.3 : Reduced Coded Foreign Policy Concessions

Concession	Number (%) of Observations
Did the target agree not to enter into any outside alliances or coalitions?	212 (33%)
Did the target agree not to aid any of the defender's enemies?	24 (3%)
Did the target agree to use diplomatic actions against the defender's enemies?	72 (11%)
Did the target agree to grant trade concessions to the defender?	43 (7%)
Did the target agree to peacefully resolve any existing disputed issues with the defender?	164 (26%)
Did the target agree to provisions for cooperation on non-military issues?	365 (57%)



Table 5.4 : Poisson Regression of the Reduced Number of Concessions

	(1)	(2)	(3)
Target's Probability of Winning	−.48** (.09)		−.28** (.13)
Defender's Contribution		.64** (.12)	.38** (.18)
Constant	.63** (.06)	.20** (.04)	.43** (.12)
Observations	641	641	641

Standard errors in parentheses

Two-tailed tests: \*\*  $p < 0.01$ , \*  $p < 0.05$

Table 5.5 : Poisson Regression of the Number of Concessions Controlling for Dispute Level Factors

	(1)	(2)	(3)
Target's Probability of Winning	−.31** (.14)	−.39** (.15)	−.29** (.15)
Defender's Contribution	.46** (.18)	.59** (.19)	.46** (.19)
Target's Number of Alliances	−.02 (.01)		−.02 (.02)
Challenger's Number of Alliances	−.12 (.07)		−.13 (.08)
Target-Challenger Contiguity	.22** (.08)		.22** (.08)
Dispute Random Effect		.21** (.05)	.20** (.05)
Constant	.56** (.13)	.64** (.13)	.56** (.14)
Observations	641	641	641

Standard errors in parentheses

Two-tailed tests: \*\* p&lt;0.01, \* p&lt;0.05

Table 5.6 : Various Regressions of the Number of Concessions

	(1)	(2)	(3)
Target's Probability of Winning	−.52** (.14)	−.43** (.12)	−.96** (.43)
Defender's Contribution	.54** (.18)	.42** (.16)	1.90** (.74)
Constant	−1.30** (.12)	.77** (.10)	1.46** (.39)
Observations	641	641	641

Standard errors in parentheses

Two-tailed tests: \*\*  $p < 0.01$ , \*  $p < 0.05$

(1) Binomial Regression

(2) Negative Binomial Regression

(3) Logit Regression

## Chapter 6

### Conclusion

This project began by suggesting that the main purpose of the state is to protect its citizens and one way a state can do that is by entering into a military alliance. This is because states aggregate their military capabilities through alliances and make it less likely that other states can benefit from using military force against them. This is supported by empirical evidence which demonstrates that states that have allies committed to defend them are less likely to be the target of militarized disputes (Leeds 2003, Johnson and Leeds 2011). The same empirical evidence also suggests that the effect of having an alliance on the probability of being the target of militarized action is comparable to other policy options such as military development or democratization.

This suggests that entering into military alliances can involve significant costs. If this were not the case, then all threatened states would enter into military alliances. One of the most significant costs of alliance formation identified in the literature is policy concessions. In exchange for military support via an alliance, states require some level of policy concessions. In other words, threatened states pay for military support in the form of policy concessions. This idea is advanced in several qualitative studies of alliances as well as several formal models. The qualitative studies highlight several alliances that were motivated in part by policy concessions (e.g., Pressman 2008) and the formal models illuminate the tradeoff between policy autonomy and security states face when forming alliances (e.g., Morrow 1991).

The next step in understanding the relationship between policy concessions and

military alliances is to ask: when will states be willing to make policy concessions in exchange for military alliances? This is the question that was explored in this project. To address this question I developed three tools.

The first tool is a theoretical model that identifies conditions under which states would be willing to make policy concessions in exchange for military alliances. To do this I rely on a simple three actor bargaining model of alliance formation. This model recognizes that bargaining among allies happens in the shadow of external threat. The level of policy concessions a state is willing to make depends on what would happen if the state did not make policy concessions and remained unallied. Therefore, the model endogenizes both external threat and policy concessions. The model produces empirical predictions about the conditions under which states will be willing to make foreign policy concessions in return for an alliance and what level of concessions they will be willing to make.

The key insight from the theoretical model is that states will make concessions in exchange for an alliance when they are unlikely to defeat their challengers alone and when their allies have a large effect on their probability of defeating their challengers in war. This insight makes it clear that what is important for alliance formation and policy concessions is the characteristics of three actors: a defender, target, and challenger. However, existing alliance formation research designs ignore the characteristics of the challenger (Lai & Reiter 2000, Gibler & Wolford 2006, Gibler 2008). Therefore, to test the implications of the model one can not rely on existing research designs.

The second tool, therefore, is an alliance formation research design that takes into account the characteristics of all three actors in the model. Targets and challengers are identified using data on territorial disputes. In these cases the challenger is a

potential external threat to the target because it wants to revise the existing status quo division of the territory and may be able to use military force to do so. In response to this potential external threat, the target is able to form an alliance with any other member of the international system. As mentioned before, the theoretical model suggests that this will happen when the target is unlikely to defeat its challenger alone and when its allies will have a large effect on its probability of defeating its challenger in war.

Using this research design I find strong support for the implications of the theoretical model regarding alliance formation. States are more likely to enter into alliances when they are unlikely to defeat their challengers alone and when their allies would have a large effect on their probability of defeating their challengers. However, finding that the model is consistent with alliance formation patterns is only part of the story. The alliance formation analysis provides no evidence that states are making policy concessions to enter into alliances in a manner that is consistent with the theoretical model. Therefore, an important step is to test the model's expectations for policy concessions among allies. However, this, obviously, requires a measure of policy concessions among allies. This does not exist in the literature on alliance formation. Studies that invoke policy concessions in alliance formation arguments rely exclusively on case studies or indirect evidence to support their arguments.

The third tool, therefore, is a measure of policy concessions among allies. To generate this measure across the alliances formed in my sample, I rely on the content of the alliance agreements. Many states formalize policy concessions in the text of their agreements. This allows me to compare the level of concessions made by states to enter into alliances. Consistent with the theoretical model I find that states make more concessions to enter into alliances when they are unlikely to defeat their

challengers alone and when their allies have a large effect on their probability of defeating their challengers in war.

The results from the policy concession analysis provide additional support for a large body of research that suggests policy concessions are an important motivation in alliance formation. It also refines the conventional wisdom. It is typically argued that the strongest states are the ones that form alliances to obtain policy concessions and that the weakest states make policy concessions for the protection of the strong state (Morrow 1991, Palmer and Morgan 2006). However, my model and empirical results suggest that whether a state wants to make concessions in exchange for an alliance depends on its strength relative to its challenger's strength. Therefore, some strong states will want to make concessions to form alliances and not all weak states will want to make concessions for an alliance.

## 6.1 Broader Implications

This research has several important implications for the role of military alliances in international relations. The most straightforward implication is that military alliances are a useful policy instrument for mitigating external threats but they can involve significant costs. In exchange for promises of military support in the event of conflict, states are expected to surrender some policy autonomy. In other words, allies charge a fee for protection. As a result, only some threatened states seek the security benefits of alliances.

It is commonly recognized that alliances are important for international security but this research suggests that alliances are important beyond security. The notion that states make policy concessions to enter into alliances suggests that alliances have important influences in all issue areas of international relations. States can

use alliances to influence other states' trade policies, domestic policies, diplomatic relations, etc. This indicates a much broader role for military alliances in international relations.

This broader role of military alliances also supports the common practice of using alliance patterns to judge the similarity of two states foreign policy positions (Bueno de Mesquita 1975, Signorino & Ritter 1999). This is usually based on the idea that states will form alliances with states that they share similar policy interests. In other words, alliances are the result of alignments in the international system. The argument advanced in this research presents an additional logic that supports the idea that alliance patterns are a valid indicator of foreign policy positions. Alliances generate alignments in the international system. When states rely on the security benefits alliances provide, they are expected to adopt policies that are in line with their allies.

A final point is that this research indicates that military alliances are an important policy instrument states can use to achieve their goals in the international system. A lot of research focuses on how states use coercive policies such as military force and economic sanctions to alter the status quo. The idea that states use promises to defend other states militarily in order to encourage particular foreign policy behaviors suggests states have another option for achieving their goals. At times, this option may also be more cost-effective and less harmful to populations.



## Bibliography

- Bennett, D. Scott & Allan C. Stam. 2000. "EUGene: A Conceptual Manual." *International Interactions* 26(2):179–204.
- Bueno de Mesquita, Bruce. 1975. "Measuring Systemic Polarity." *Journal of Conflict Resolution* 19(2):187–216.
- Bueno de Mesquita, Bruce. 1981. *The War Trap*. New Haven: Yale University Press.
- Carter, David B. & Curtis S. Signorino. 2010. "Back to the Future: Modeling Time Dependence in Binary Data." *Political Analysis* 18(3):271–292.
- Fearon, James D. 1995. "Rationalist explanations for war." *International Organization* 49(3):379–379.
- Ghosn, Faten, Glenn Palmer & Stuart Bremer. 2004. "The MID3 Data Set, 1993–2001: Procedures, Coding Rules, and Description." *Conflict Management and Peace Science* 21(2):133–154.
- Gibler, Douglas M. 2007. "The Costs of Reneging: Reputation and Alliance Formation." *Journal of Conflict Resolution* 52(3):199–236.
- Gibler, Douglas M. & Scott Wolford. 2006. "Alliances, Then Democracy: An Examination of the Relationship between Regime Type and Alliance Formation." *Journal of Conflict Resolution* 50(1):129–153.
- Gulick, Edward V. 1955. *Europe's Classical Balance of Power*. New York: W.W. Norton.
- Hensel, Paul R. 2001. "Contentious Issues and World Politics: The Management of Territorial Claims in the Americas, 1816-1992." *International Studies Quarterly* 45(1):81–109.
- Huth, Paul K. & L. Todd Allee. 2003. *The Democratic Peace and Territorial Conflict in the Twentieth Century*. Cambridge: Cambridge University Press.
- Johnson, Jesse C. & Brett Ashley Leeds. 2011. "Defense Pacts: A Prescription for Peace?" *Foreign Policy Analysis* 7(1):45–65.
- Lai, Brian & Dan Reiter. 2000. "Democracy, Political Similarity, and International Alliances, 1816-1992." *Journal of Conflict Resolution* 44(2):203–227.

- Leeds, Brett Ashley. 2003. "Do Alliances Deter Aggression? The Influence of Military Alliances on the Initiation of Militarized Interstate Disputes." *American Journal of Political Science* 47(3):427–439.
- Leeds, Brett Ashley, Andrew Long & Sara McLaughlin Mitchell. 2000. "Reevaluating Alliance Reliability: Specific Threats, Specific Promises." *Journal of Conflict Resolution* 44(5):686–699.
- Leeds, Brett Ashley, Jeffrey M. Ritter, Sara McLaughlin Mitchell & Andrew Long. 2002. "Alliance Treaty Obligations and Provisions, 1815-1944." *International Interactions* 28(3):237–260.
- Morgan, T. Clifton & Glenn Palmer. 2003. "To Protect and to Serve." *Journal of Conflict Resolution* 47(2):180–203.
- Morgenthau, Hans J. 1973. *Politics Among Nations: The Struggle for Power and Peace*. New York: Alfred A. Knopf.
- Morrow, James D. 1991. "Alliances and Asymmetry: An Alternative to the Capability Aggregation Model of Alliances." *American Journal of Political Science* 35(4):904–933.
- Morrow, James D. 1994. "Alliances, Credibility, and Peacetime Costs." *Journal of Conflict Resolution* 38(2):270–297.
- Palmer, Glenn & T. Clifton Morgan. 2006. *A Theory of Foreign Policy*. Princeton: Princeton University Press.
- Pressman, Jeremy. 2008. *Warring Friends: Alliance Restraint in International Politics*. Ithaca: Cornell University Press.
- Schroeder, Paul W. 1976. Alliances, 1815-1945: Weapons of Power and Tools of Management. In *Historical Dimensions of National Security Problems*, ed. Klaus Knorr. Beverly Hills, CA: Sage pp. 227–262.
- Signorino, Curtis S. & Jeffrey M. Ritter. 1999. "Tau-b or Not Tau-b: Measuring the Similarity of Foreign Policy Positions." *International Studies Quarterly* 43(1):115–144.
- Singer, J. David, Stuart Bremer & John Stuckey. 1972. Capability Distribution, Uncertainty, and Major Power War, 1820-1965. In *Peace, War, and Numbers*, ed. B. Russett. Beverly Hills: Sage pp. 19–48.
- Smith, Alastair. 1995. "Alliance Formation and War." *International Studies Quarterly* 39(4):405–426.

- Smith, Alastair. 1998. "Extended Deterrence and Alliance Formation." *International Interactions* 24(4):315–343.
- Snyder, Glenn H. 1997. *Alliance Politics*. Ithaca: Cornell University Press.
- United Nations. 1955. *Treaty Series*. Vol. 219 New York: United Nations.
- Walt, Stephen M. 1987. *The Origins of Alliances*. Ithaca: Cornell University Press.
- Waltz, Kenneth N. 1979. *Theory of International Politics*. New York: McGraw Hill.